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# DOMINION DENTAL JOURNAL

(Official Organ of all Dental Associations in Canada)

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## Systematic Methods in Operative Dentistry

*L. F. Krueger, D.D.S., L.D.S., Toronto.*

*Read before the Waterloo Dental Society November 15, 1923.*

The part of the practice of our profession which we will consider at this time (Systematic Methods in Operative Dentistry) will be somewhat limited in its scope, yet singularly significant because it is of such vital importance to our patients as well as to ourselves. To our patients because they will enjoy better operations, will be less hurt, worried or annoyed. It will enable us to speed up as well as improve the quality of our service, as well as give us more time to play and more time to devote to our several other duties.

The points I wish to bring out should help to make for strong fast operating, to accomplish more with less expenditure of time and energy. A system, probably exacting, yet simple when mastered; I hope to be able to show how to use the Dental engine and anaesthetics less and our cutting instruments and oil stone more.

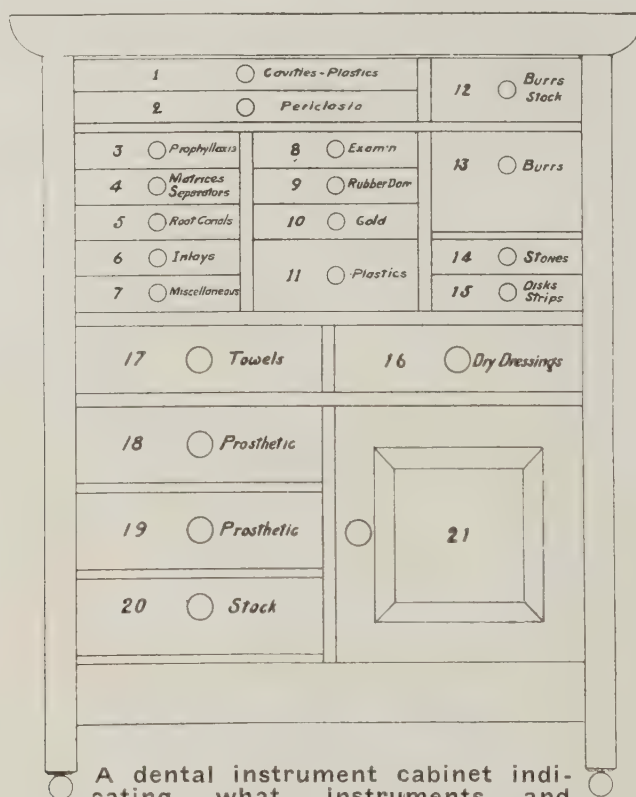
Necessarily we must be properly equipped to do each of these several little things at the right or proper time; with this I do not mean alone, an operating room properly arranged or equipped with all the necessary instruments and appliances, and an education in Dentistry, but also that the man behind the gun develop the three fold nature or make up of every human being—the Physical, Mental and Moral.

In the Physical, let us do our best to keep fit; by proper habits of living, that is, giving some thought to our nourishment, shelter, clothes, exercise and play. In the Mental—Mind; probably ninety per cent. of what we are: big part of our equipment, this intellectual or rational part of man, our education, our opinions, our intentions. Knowing, however, is not enough, we need the action of the physical to carry on. Energy in some at any time, in all, as we grow older is not

generated so quickly or stored so plentifully. Let us not waste it.

In the Moral—I just want to suggest that we have some constructive plan to keep us from skidding and help us not to mistake dead for living pulps or soft decayed dentine for the hard eburnated kind Dr. Webster refers to.

The operations I will refer to are not the temporary expedients that we all meet more or less, in the invalid, the convalescent, or in other extraordinary circumstances, but the Operative Dentistry that constitutes about 90% of our usual practice. The kind of operations that are intended for the long pull, say 10- 20- years or a life time maybe under normal circumstances.



A dental instrument cabinet indicating what instruments and equipment are kept in each drawer and the arrangement of the drawers.

The principles we will dwell on are fundamental and more or less specific. They are the same as are being taught at our College, and for that matter in all schools on the American continent. They are not new, yet they are not old. I think to some of you it will be much like the married sweet-hearts telling each other the same sweet story. Not alone just because they love to, but because it helps them on their way.

In keeping close to our subject, it will be necessary for us to consider our Dental Cabinet.



## THE LOCATION OF THE DENTAL CABINET

The location of the Dental Cabinet is governed by: First. The light, which controls the position of the chair; second, the size and form of the room; third, the dentist's method of operating, which is governed largely whether he has a dental nurse or not.

The position of the cabinet in relation to the chair governs the arrangement of the instruments. (Note: These instruments are arranged in the most convenient places for an operator who has not the use of a dental nurse, as is found in a dental college).

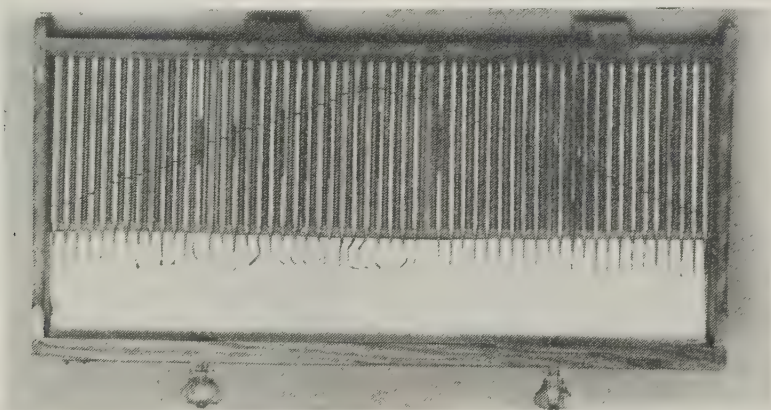
On it—A good arkansas oil stone, properly kept.

In it—All our operative instruments, systematically and orderly arranged.

## ARRANGEMENT OF INSTRUMENTS IN THE CABINET

General suggestions:—

1. The most frequently used instruments in the most convenient places.



Drawer No. 1, containing cutting instruments, plastics, carvers and amalgam pluggers. These are arranged in the order of their use beginning at the right side. Chisels, hatchets, hoes, spoons, enamel trimmers, plastics, carvers, amalgam pluggers and burnishers. Below each instrument is the factory number in type and in each handle is cut a circular groove in such a position that combined, they make two straight lines as indicated in the cut. With these two devices no assistant could possibly get an instrument in the wrong place.

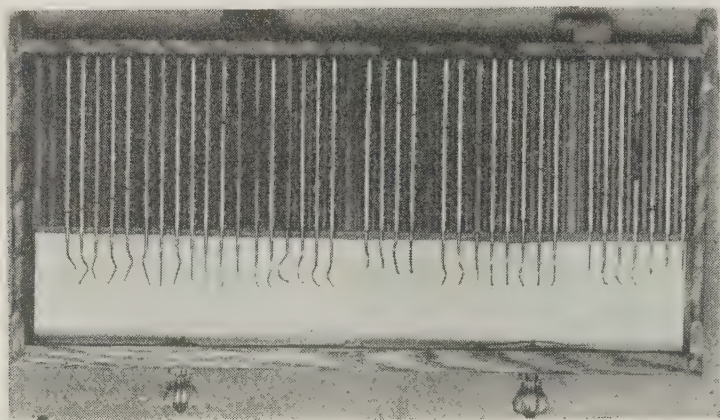
2. Instruments for the same operation should be kept together.

3. Instruments should be kept in order of their use.

4. The order of size and number should be recognized.

5. Instruments or Equipment which are sharp, heavy, caustic, or poisonous should not be placed above the shoulder line.

Without a good oil stone, properly kept, the finest set of operative instruments are useless. New instruments are not sharp. Instruments must at all times be keen and sharp,



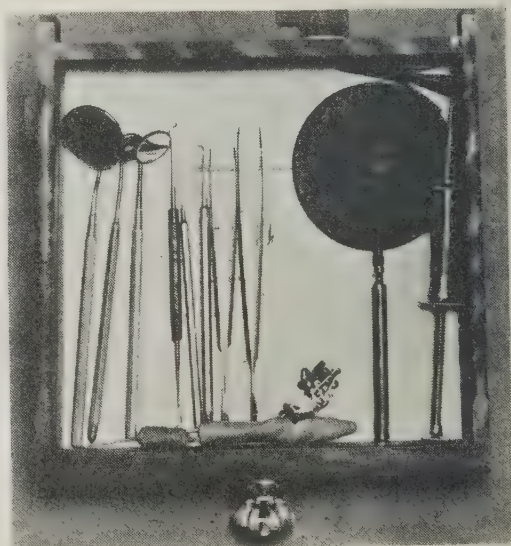
Drawer No. 2 contains scalers, plains, files and curettes for periclasia. The same device for locating instruments is used as in Drawer No. 1.

the bevel accurately maintained for their particular purpose and the skill of the operator using the same.

We will now assume that our patient is about to arrive.



Drawer No. 4 contains the root canal equipment. Note that the paper in the bottom of the drawer has typed upon it the name of each instrument which should be in the drawer.

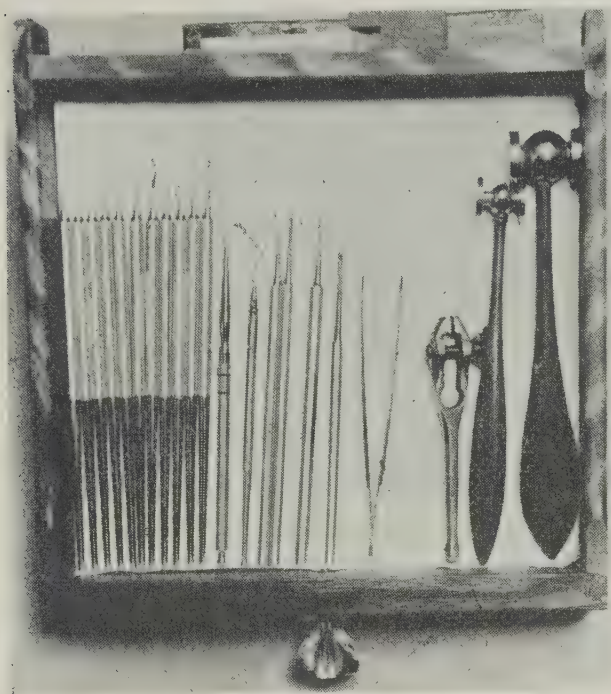


Drawer No. 8 contains the ordinary instruments used in making an examination for dental caries.

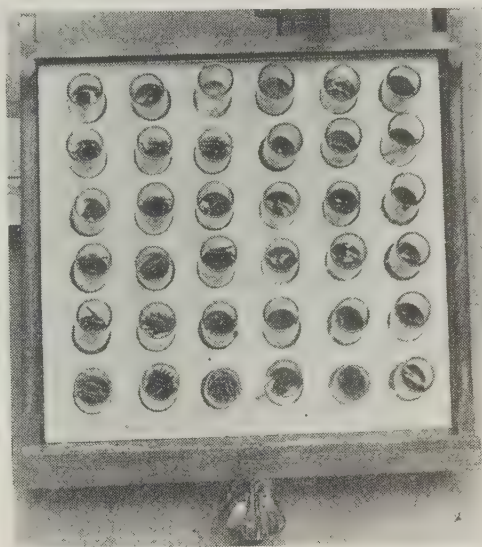
The diagnosis was made at a previous visit, and you have established a definite notion of what you are going to do. Restorations are required. Cavity preparation is essentially the same for all filling materials, except in detail, said detail, principally bevelling of the enamel margins. Restorations when completed must restore that tooth or teeth to normal form and function. That embodies four requirements.



Proper contact, interproximal space, smooth margins, marginal ridge and other grooves and markings where they occur in the other teeth, and then also a consideration of the force that this restoration will be required to resist; normal occlusion, traumatic occlusion, non-occlusion.



Drawer No. 10 contains the hand and automatic equipment for inserting gold foil fillings, also files and burnishers. By an accident a part of this equipment does not appear.



Drawer No. 12 is another view of the bur stock drawer.

Over exercised teeth develop periodontal pockets.

Under cause, exercised teeth to exfoliate.

All these aforementioned factors make to establish a proper equilibrium or function and these sorts of thing are needed in our endeavor for best results.

#### CAVITY PREPARATION

Instruments for preparing a certain cavity are selected according to what the shape of the cavity will be when completed.

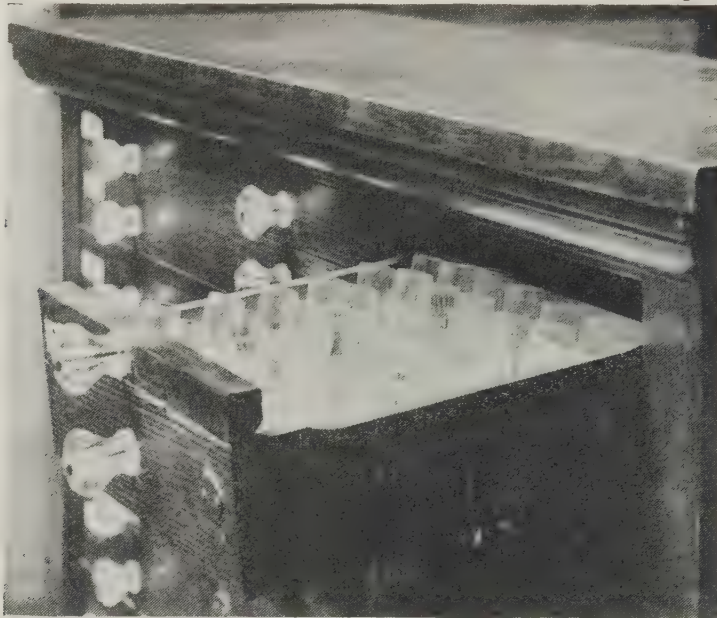
Select from cabinet those instruments required.

When an instrument is once taken in hand, do all possible with it before laying it down. Complete each step in the operation as far as possible before going on to the next.

If in these operations the different steps are always followed in the same order, the movements of the operator will become automatic and much time is saved.

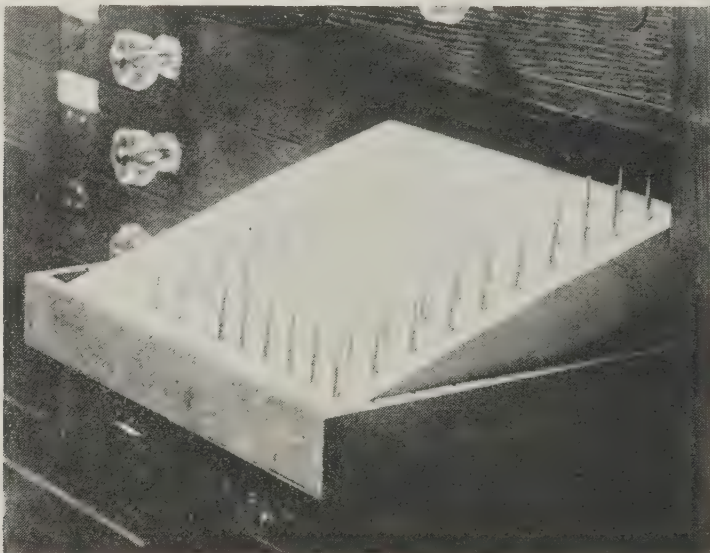
It is not necessary to go into the different steps of cavity preparation, except to mention that when the outline form has

been made by breaking down all undermined enamel, remove some of the decay which may interfere with the revolving



Drawer No. 12 shows glass tubes,  $1\frac{3}{4}$  inches long and  $\frac{3}{4}$  inch diameter, containing a full stock of burs of all sizes and forms from which the rack in drawer 13 is replenished. This is the stock drawer and pulls out into full view.

cutting instruments, or enough to determine if the pulp will be involved.

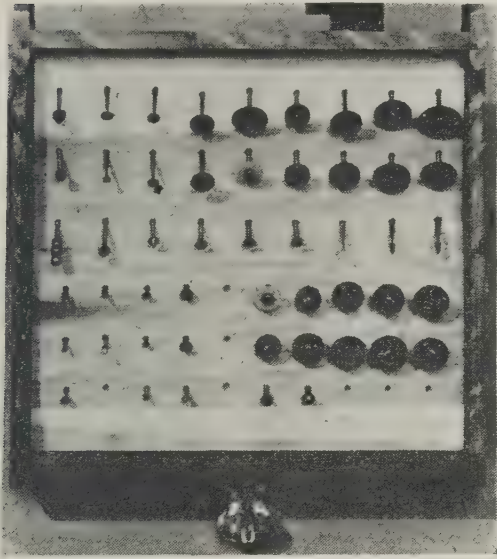


Drawer No. 13 contains the engine burs for straight and angle hand pieces. There are two perfectly new burs always kept in the first two rows for each handpiece. Once a bur has been used, it gets into the third row and if used a second time it gets in the fourth row and becomes a drill. The forms of burs run upward in the block.

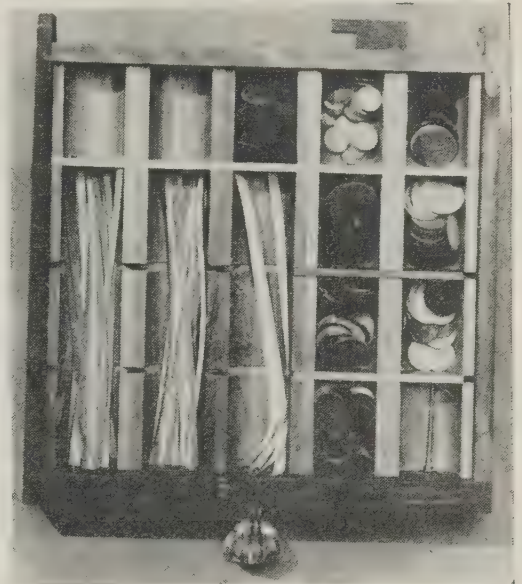
Most cavity preparation can and should be principally done with hand instruments, the exception being, the hollow-



ing out of fissures, grooves, extending cavity margin in sound tooth structure or those inlay preparations of the McBoyle or



Drawer No. 14 contains all forms of stones both for the straight and angle hand pieces arranged in a rising block so they can be easily seen.



Drawer No. 15 contains the disks, mandrel and strips used in polishing fillings.

Carmichael type, and in these stones are most acceptable. When a burr is used it should be handled in a definite and decisive manner, for nothing is more painful and annoying than this eternal starting and stopping.

Approaching the pulp brings us to one of the most important considerations in the field of Operative Dentistry. *Development or calcification.* When is a root or tooth fully formed? When is it safe to seal arsenic in a tooth? When is it safe to use pressure anesthesia, or when if it must be done, would be the best period of that particular individual's life to fill a root canal.

These questions can only be answered by having an understanding of when the tooth or teeth erupt, when they are fully formed or calcified; or in the case of temporary teeth also when they begin to resorb or decalcify.

Taking it on the basis of the normal child or youth in its development period it works out about like this.

Temporary teeth:

Temporary Teeth.

Time of eruption:

Lower central incisors—about 6 months

Upper central and lateral incisors—8 months

Lower lateral incisors—12 months

First Molars—14 months

Cuspids—18 months

Second Molars—26 months.

They are all fully calcified at about  $2\frac{1}{2}$  years after birth. The cuspid and second molar being last.

They exist in this peaceful state only for a very short time. Decalcification of these teeth begins at about  $3\frac{1}{2}$  years before they are lost, or we had better say, before they are normally replaced by their more permanent successor.

Let us take just one case of this temporary set.

The first bicuspid replacing normally the first temporary molar at 10 years. Take from this  $3\frac{1}{2}$  years and you have the time at which decalcification begins. And after decalcification has begun is no time for the use of arsenic.

The permanent teeth erupt about as follows, and roots fully formed in from 2 to 3 years after, except the cuspids, which are fully formed when erupted.

Approximate age of eruption:

First Molar— $5\frac{1}{2}$  to 7

Central Incisor—6 to 7

Lateral Incisor—8 to 9

1st Bicuspid—10 to 11

2nd Bicuspid—11 to 12

Cuspids, lowers first—12 to 14

2nd Molars—14 to 15

3rd Molars—16 to 20, and indefinitely beyond.

Now by understanding these phases in tooth development we can have a pretty good idea how large the pulp chamber will be, how far the horns are apt to project, how wide the apical end is open, and how important it is to reserve that tooth at least until we have a fair show at a good root canal operation.

We must not overlook the anatomy of the Pulp Chambers, cutting one cross wise and long wise occasionally is a good and profitable pastime.

Having these special facts in mind we will approach the pulp with great care. Save it vitally if at all possible. Dryness of the cavity from now on is essential. The largest spoon excavator of such shape as the size and type of cavity will permit lessens the danger of dropping into the pulp in these close cases, small areas of decay penetrating at some parts are to be taken out at these points with the smallest



instruments rather than digging away any sound dentine with the larger sizes (burrs of any description have no place in the removal of carious dentin). With the proper care and skill in the method of our approach, many pulps can be preserved for a life of usefulness instead of becoming infected, diseased, and the whole tooth lost.

Since pulp removal and root canal filling is such a big operation and should never be attempted except under the strictest surgical principles, it would appear that we can indulge in a little petting.

A mild penetrating antiseptic, an anodyne, a coagulator may be applied to the dentin, the selection depending upon the circumstances of the case, the location of the tooth and the kind of filling material to be used—(Ag. No. 3 Phenol, Phenol followed by alcohol, Cloves, Eugenol, Campho Phe-m-que).

Agno 3, Posterior teeth—keep off enamel.

Phenol—foil filling discoloration.

Phenol and alcohol—better.

Campho Phe-m-que has oil in it,—can we have it with foil.

Cloves Discolor our teeth.

Eugenol may be better.

Exposure or near exposure offers possibilities of developing the petting art to the nth power, and great success can be had in this gentle art. Large metallic restorations or heavy work are not recommended until we are sure of our result.

In pulp capping: Zno-cloves, to this add a little Zinc-sulphate—not too mushy. Place it on exposure with wire loop. Thymolized Calcium Phosphate. Callahauss solution good also.

It is not permissible to leave soft decayed infected dentin in fully developed adult teeth, for surely the outcome can spell nothing but misery and disaster.

Cases of children in developmental stage is a matter of doing whatever you can in the hope that pulp removal can be deferred until complete root formation has taken place.

Bevelling of enamel walls and cavity margins in the finishing up is done with fine stones, discs or chisels. At the gingival of posterior teeth nothing equals the gingival marginal trimmers, two pair, right and left in angles for mesial and distal use. We can call them indispensable if for the one reason only, that it is possible to bevel the gingival margin

without razzing the dento enamel junction which hurts like sin.

When the entire operation of cavity preparation is completed there is no more use for the instruments we have used for that work, they are removed from the operating table to a tray. The instruments required for whatever kind of filling that is to be used are then taken from their orderly resting place in the cabinet, they are selected according to the definite notion of what is intended to be accomplished in the size and shape of the cavity at hand, and the walls to be condensed against.

Now these instruments finished with and those of the next step or any succeeding step in the operation are each in their turn removed to the tray to be taken away and sterilized before being returned to their proper place in the cabinet where they will then be ready and conveniently gotten at for the next case. Purely surgical instruments to be boiled again when using.

Before placing Burrs or any instruments in sterilizer they should be scrubbed clean with brush and cold water. Edged instruments to be carefully handled when coming in contact with each other. Treat them like you would your razor, and give them the odd stroke on the stone while you are working.

We might go on citing a number of other operations establishing order of procedure, but this would be more or less repetition, in principle at least, and our time can possibly be spent to better advantage in throwing the meeting open to questions, stunts, or whatever you like.



## Exodontia

*A. L. Baker, D.D.S.*

### *Post Operative Treatment*

The extraction of any tooth necessarily creates a wound and every wound no matter how small, is a more or less fertile field for the propagation of pathogenic bacteria and a gateway for their entrance into the human system. This condition, of itself, should be sufficient reason for extreme care and treatment after extraction, as an open wound of this character caused by the removal of a tooth from its supporting structures, would be considered serious if located on the external surface of the body and no surgeon would cause a wound of similar nature without due attention to sepsis.

### *Extraction Without Complication.*

Where the patient is not afflicted with any systemic disturbances, where the oral cavity is in a prophylactic condition, and where there are no pathologic conditions involving the teeth excepting the crowns, the field of operation for the removal of the tooth is as good as could be presented. In such a case, if the extraction has a comparatively simple operation, the treatment to be followed is likewise of a simple nature. The margins of the socket are flushed with an antiseptic solution to insure the removal of any debris that may have entered from around the neck of the tooth. The primary hemorrhage following the extraction usually ceases in a few minutes and in the meantime the patient is given a glass of sterile water with which to clear the mouth of blood. Any suction of the socket should be discouraged, the blood should be permitted to coagulate in the socket and the clot should not be disturbed. It is advisable not to dismiss the patient nor to interfere with the clot, by inserting finger or any other means. The patient should also be instructed to use salt and water as a mouth wash as hot as possible and hold it in the socket two or three times a day. Usually cases that are treated in this way cause no further trouble. However should increased pain or swelling follow, the patient should be instructed to return.

### *Traumatic Injury to the Gum Tissue.*

However the above condition is very rarely the case and we more often find complications of a mild or serious nature. One of these is traumatic injury to the gum tissue. Where

the injury is merely the destruction of a small amount of marginal or septal gum tissue the treatment is the same as that mentioned above. Where there is laceration leaving rough edges or small flaps of tissue in which circulation will likely be arrested, the ragged parts should be removed with a pair of curved scissors. But where a considerable area has been loosened, it should be retained if possible, to protect the alveolar process. The detached margins are carefully adjusted and held in position, if necessary by bits of sterile gauze being placed in the socket. However if the laceration has been of an extensive nature and the gum tissue has been loosened from the process and cannot be retained by the gauze dressing alone, sutures should be used to hold the tissue in place. These should be removed as soon as the parts retain their normal position.

#### *Traumatic Injury to Alveolar Process.*

Any small pieces of loose spiculum of the process should be removed with tweezers or washed away with syringe. These detached pieces of the process if allowed to remain will often cause considerable after-soreness and often irritate the sockets for several weeks before coming to the surface.

Where any sharp or irregular margins exist as a result of extraction, they should be carefully cut away with bone-cutting forceps or a bur, if necessary. These projections also often prove irritating for some time afterwards and delay the closure of the wound. This treatment is especially important where all the teeth have been removed and the loss of teeth is to be replaced by artificial restoration.

#### *Curettage.*

The question of curettage after extraction is one in which a number of differences in opinion seem to exist. However the statement is generally taken to be true, that curetting should not be attempted unless it can be performed in a surgical way.

#### *Acute Alveolar Abscess.*

Where an acute alveolar abscess exists and no definite outline is present, or where a sinus has been established by nature or otherwise, curetting is not indicated. In fact if curetting were attempted, areas are opened up in the bone for the invasions of bacteria.



*Chronic Alveolar Abscess.*

Where a chronic alveolar abscess has existed, if granuloma or abscess sac is present or indicated, careful curetting with a suitable instrument, is probably in order. It should, however, be done in a surgical way. Sometimes the abscess or sac in which it is contained remains attached to the tooth. If not, the sac may be peeled away carefully with as little unnecessary laceration of the tissues as possible.

To obtain the efficiency after this curetting has been done, the socket should be thoroughly irrigated with an antiseptic solution to remove any broken down tissue. A dressing of 50% solution of ordinary 7% tincture of iodine may be used as a swab and the socket afterwards packed tightly with iodoform gauze. This dressing may be removed the following day and repacked after the socket has been washed out with a physiological solution. However this final treatment is often considered unnecessary.

*Necrosis.*

Where there is extensive necrosis about the root of an extracted tooth, whether of a pathologic or chemical origin, all necrosed area should be carefully removed with a suitable curet. The subsequent treatment is to thoroughly sterilize the parts, stimulate healthy cell formation and protect the lesion with suitable dressings. Tincture of iodine may be used as a sterilizing agent on account of its penetrating quality.

*Post Extraction Pain*

Patients are very often disappointed on account of the fact that the pain does not cease immediately after extraction. It is therefore wise for the operator to explain to the patient the probable duration of the pain in order that the conclusion may not be drawn that the operation was not properly performed.

The treatment of this after-pain depends on the cause of the disturbance, which can generally be traced to some pathological condition which existed previous to the extraction or some traumatic injury which occurred to the parts at the time of the operation. However other conditions may arise and give considerable after-soreness.

*A dense blood clot* may cause severe pain in the parts for considerable time after extraction. The treatment is to remove the clot, cleanse the socket well and stimulate a new clot.

*A fractured root left in place* with a portion of the pulp

tissue projecting above the root will give considerable after-pain. Where the root cannot be removed, apply 95% phenol or by removal of pulp tissue by general or local anaesthetic.

*A dry socket* often results after extraction. It is caused by the lack of the hemorrhage that should follow an ordinary extraction. It may also be caused by the removal of the blood clot as by sucking, etc. However the extreme pain which usually accompanies these so-called dry sockets is usually relieved by curetting the socket and stimulating a flow of blood, and consequently a blood clot.

### *Hemorrhage.*

*Primary hemorrhage* which is the immediate flow of blood from a wound is usually controlled by nature. However if this bleeding continues for many minutes, it should be controlled by artificial means. Where artificial means becomes necessary, an attempt should be made to secure a blood clot as no dressing will seal the socket and protect the tissues as effectively as nature's blood clot. There are many ways of producing a clot, and one which seems to be very effective is by inserting compound into the socket and having the patient close on it. Another way is by packing with sterile gauze very tightly, beginning at the bottom and when the socket is tightly packed, instruct the patient to close on it tightly. In a few minutes remove and see if bleeding has ceased, and if not pack tightly again.

Certain chemical agents may be used which possess styptic qualities. Probably the best of these is tannic acid which is both efficacious and harmless, although it does possess a disagreeable taste. However primary hemorrhage is usually easy to control and gives little trouble.

### *Secondary Hemorrhage.*

This usually occurs after a period of 24 hours from the time of operating and is usually due to sepsis or infection. The method of treating this type of hemorrhage is by pressure. Preliminary to packing the socket the wound must be thoroughly cleansed. All broken down tissue and blood clots are removed and the parts carefully syringed with an antiseptic solution. If a dressing is used it should not be allowed to remain in the socket longer than 24 hours. It is better to remove it in from 10 to 12 hours and if there is a recurrence of bleeding the socket should be carefully cleansed and re-packed.



*Excessive Bleeders.*

A history of excessive hemorrhage following a previous extraction should be carefully noted to ascertain whether it was caused by a tendency to abnormal bleeding. If from the history or the physical appearance of the patient, the operator thinks the condition still exists, it is advisable to defer the operation for short time and administer calcium lactate in 15 gr. doses three times a day for a few days preceding the operation.

*Hemophilia* or hemorrhagic diathesis is a persistent and uncontrollable tendency to bleeding. It is peculiarly interesting in that it is hereditary and is transmitted from the female to the male at birth, the former often escaping the ailment. Operations on patients possessing this disease should be avoided if possible. However if they are performed, the preliminary treatment is the same as described above.

*Trismus*

Trismus of a mild or serious nature often results from dental operations in the region of the third molar. It is therefore necessary, especially when extracting in this region to produce as little traumatic injury as possible.

The first aim in the treatment of trismus is to produce drainage if possible by an incision extraorally down to the bone and then pack with iodoform gauze every 24 hours until condition subsides. Also instruct patient to exercise muscles involved as much as possible by opening and closing mouth. Sometimes an extra oral incision may be necessary to obtain drainage in the lower jaw, depending on the condition of the case.

*References.*

1, Aids to surgery by Cuning and Joll; 2, Exodontia—Extraction of teeth by Winter; 3, Dental Cosmos; 4, Dr. Ridsen notes; 5, Dr. Paul notes.

## The Dental Hospital of Leeds

The Medical School building is a splendid structure with abundance of space and equipment for all the students in attendance. The medical school and infirmary are adjoining each other and about five minutes from the University. As in Edinburgh the dental student attends lectures in physics, biology, chemistry and physiology in the university and the subjects of anatomy, medicine, surgery and pathology in the medical school and infirmary.

Leeds University, like Manchester, Birmingham and Liverpool, aims to supply a higher education in subjects desired by the people of the district. Leeds supplies an education in woollens, leather, iron, dyes, commerce, teaching, etc., besides engineering, law, medicine and arts. Courses are provided for a diploma and also a degree in almost all departments. A dental student can get a diploma and a license without getting a degree from the University. Candidates in dentistry are advised to take the course in medicine along with the dental course.

Although the dental student takes the same course in Anatomy, Physiology, Histology, Medicine and Surgery as the medical student it serves him no purpose towards a medical degree unless he registers in the medical course before he begins.

The hospital staff find it necessary to do conservative dentistry for almost nothing in order to get sufficient patients and strangely enough the whole cost of running the hospital is paid out of the fees charged for dentures. Five mechanical dentists are employed to do the prosthetic work for patients. The student dental mechanics do technique work only and rarely touch patient's work though it is all done in the same room.

Like Edinburgh the examinations are no child's play. One candidate told the writer that he had failed twice in general surgery. At the first failure he was required to do only surgery over but at the second failure he was required to do the whole course again. Thirty-two seniors went up and eighteen passed. This was the second trial for several of them.

Leeds University is one of the wealthy institutions of Britain. It has about fifteen hundred students in its four chief departments—Law, Arts, Medicine and Engineering but many more in the other departments. It is a modern



institution, growing rapidly, serving a great purpose. It impresses one with action and vigor. Its Vice-Chancellor, Sir Michael Sadler who has made modern Leeds University, is leaving to take the premier position in education, Master of University College, Oxford. After a month's holiday in France he will go to Oxford about October 1st.

Leeds is the centre of a large population, itself being about half a million. There is an opportunity for dental education both of the public and the profession since there are less than thirty qualified dentists in the district. Of course there are probably more unqualified but what of that when like populations in other centres support over five hundred dentists.

The Dental Hospital of Leeds is one of the new dental institutions of Great Britain. It began as a proprietary institution without gain to its organizers but is now under a complete university organization. Its teachers are paid a salary for their lectures but give all their time as clinicians at the dental hospital free of charge. Under the guidance of its present governing body and its enthusiastic teachers it will rise to a first place in Dental Education. To Sir Michael Sadler is due no small measure of its present success. It was fortunate in having its clinical department recently located in the centre of a very large room all around which are located the outdoor departments of the infirmary. (Note—A general hospital is usually called an Infirmary in the Provinces). The wards of the hospital are radiating out from the out departments. The dental anaesthetic and exodontia room is a branch of one of the general operating rooms of the infirmary and located just off the dental department.

The Operative, Prosthetic and Orthodontic Departments are all together. All patients must pass in and out of a turn stile. About two thousand five hundred dental patients enter each month. The equipment is quite modern and the teachers are active. The students were seeing four patients from the hospital wards on the floor while we were there. Two fractures, one general arthritis and the other maxillary deformity. Students are thus brought into intimate contact with hospital practice in connection with mouth diseases as occurs in private practice. Where a dental infirmary is separate from a hospital its students may rarely if ever see a sick dental patient. A new dental hospital will be built in the near future. It will be located in connection with the infirmary and associated with the medical school.

## The Mucin Film Test

### History Repeats Itself—Sometimes Fast

*By Jules J. Sarrazin, D.D.S., New Orleans.*

In the latter part of August, 1914, it was broadcasted throughout the land that Emetin was a specific cure for Riggs' Disease, no matter how far advanced. Two thoroughly equipped expert bacteriologists had truthfully averred that endamoebae buccalis carried infection with them, had assumed that they burrowed into gingival tissue, and had deducted that if the amoebae were destroyed, the disease would disappear.

During the experimentation therapeutic results were deputed to the observation of dentists who mistook the hemostatic effect of Emetin for a control of Riggs' Disease, without realizing that bone destruction and infection were going on without check. And thus, through misled sincerity, scores of alimentary tracts were damaged by an excess of Ipecac internally, and the alkalinity of blood currents were reduced by Emetin hypodermically, while Periodontoclasia continued unmolested.

A thorough prophylactic treatment by a periodontist, or by a dentist who devotes time and painstaking care to that important work, implies not only the removal of every vestige of deposit, hard and soft, from all teeth and their necks, as far as accessible, without lacerating gums, with special attention to approximal surfaces but also includes the thorough polishing of all teeth and exposed necks, again giving special attention to proximal faces.

It is the experience of those who do thorough prophylactic work, that even then, after they have completed their careful polishing, the only safety against mucin films lies in staining the teeth to discover spots where films have escaped; nor do they expect to see such films without the stain.

On account of the valuable tonic effect of Zinc Salts on mucous tissue, no staining solution equals Dr. Eugene S. Talbot's Iodo-Glycerole, and it is the one employed in the following tests to determine the efficacy of solvents for mucin films.

Teeth may appear perfectly clean and glossy after prophylaxis is completed. This proves nothing as far as mucin films are concerned. Such films as have escaped will show a light brown color if saliva is excluded, teeth painted with Iodo-Glycerole, and rinsed off with pure water. The stains



will usually be seen more at approximal faces of molars and bicuspid, and at those embrasures, and still more mesially than distally; that is, where polishing is the more difficult. Incidentally, that explains why pyorrheal pockets are more frequent at those localities. It is because the patient's thorough cleansing with tape, with an up and down motion, is more difficult there.

The stains of Iodo-Glycerole in mucin films will persist for nearly ten minutes after rinsing the mouth, so that if the staining is done to a few teeth at a time, it becomes easy to allow no plaque to escape, by re-scaling and re-polishing at such spots, and re-staining to check up, until no locality takes the stain. This is correct testing for mucin film to rid the mouth of areas holding the main local etiology of caries and periodontoclasia.

Into mucin plaques the lime salts concrete deposits which, soft at first, condense harder and harder in time. Plaques and deposits, soft or hard, contain and breed pyogenic and acid excreting bacteria.

Teeth which have received a thorough prophylactic treatment, and would have been correctly brushed with a mucin film solvent, after breakfast and at bedtime, ending each time with rinsing for two minutes by the clock, using tongue and cheeks to force the solvent between the teeth, such teeth should take no or only a very faint stain from Iodo-Glycerole a week later. In trials made, under test conditions mentioned, the use of no liquid dentifrice yet evolved has shown freedom from mucin films by the absence of, or by very faint staining. On the other hand, teeth kept correctly brushed with dry powder, and taped, the powder and tape containing the spongy part of Cuttlebone (200 fine) such teeth, one week after thorough prophylaxis (and sometimes months) have refused the stain at bicuspid and molar embrasures, approximally and elsewhere.

Clinical tests may be checked up on freshly extracted teeth as follows:

Select freshly extracted bicuspid and molars with enough crowns left to show approximal enamel surfaces. Keep them in pure water. Change the water often prior to tests.

Before hand, make up your mind that you will have eyes only for enamel surfaces, and will disregard the appearance of cavities, fillings and cemental surfaces.

Preferably use teeth coming from the same mouth, but others will do, provided they offer similar conditions as to size and morphology of crowns.

With a scaler cleanse all hard deposits, large and small, even tiny hard specks, but do not scrape on enamel surfaces. In order to respect the underlying plaques, use a sharply edged scaler, so as to feel small frosty calculi, and remove them without scraping. Give special care to approximal surfaces and their angles.

Assort two groups of teeth, mating in quantity, types and sizes of crowns. Place each group in a separate jar of pure water. Label one jar "Solvent" and the other "Powder."

Separately and thoroughly brush with powder each tooth from the "Powder" jar only. Use the spongy inside of cuttlebone, pulverized 200 fine, or a tooth powder with it as a base. Give special care to approximal surfaces and their angles. Rinse thoroughly in pure water; replace in the jar. Treat every tooth from the "Powder" jar only in that way.

Select two approximately mated teeth, one from each jar. Teeth from the "Solvent" jar, each separately, shake for two minutes, or longer, in a test tube containing the mucin solvent solution. Rinse thoroughly in pure water; immerse for thirty seconds in Iodo-Glycerole; rinse off the Iodo-Glycerole with pure water, and observe the stains taken.

Teeth from the "Powder" jar, which have already been rinsed and placed in pure water, go directly into the Iodo-Glycerole for thirty seconds, or longer, and will, after rinsing, show no stains, except in enamel pits or defects.

Repeat the above technique with a number of pairs of approximately mated teeth. Draw your conclusions. "A word to the wise is sufficient." "Everything that glitters is not gold," nor is every tooth free of films that looks clean after a protracted violent shake.

An error similar to that of Emetin seems to have been made. Emetin destroyed endamoebae. It was not the endamoebae which needed extermination, but instead, the pyogenic bacteria on and around them. A solvent to mucin in saliva does not prevent mucin films or plaques on teeth, because that solvent is not kept in the mouth all the time, and, during its absence, mucin inspissates (or thickens) into films. Just like we needed to destroy pyogenes instead of amoebae do we need to dissolve inspissated mucin films instead of free mucin in saliva, unless we could keep cheeks distended with the saliva mucin solvent all the time.—*Oral Hygiene.*



## Dominion Dental Council

The following have passed their D.D.C. examinations in the following subjects, September, 1923:

### OPERATIVE DENTISTRY

Crich, W. A.; Dinniwell, R. A.; Lloyd, W. J. M.; McDougall, R. H.; McMachen, W. L.; Rushton, J. A.; Simon, M. L.; Strachan, C. L.; Wright, J. E.

### ANAESTHETICS

Conrod, J. L.; Crich, W. A.; Clements, R.; Dinniwell, R.; Green, C. J.; Jackman, V. M.; Jackson, J. E.; Lent, F. E.; McDougall, R. H.; McInnes, A. C.; McMachen, W. L.; McNichol, W. C.; Rushton, J. A.; Slack, C. S.; Strachan, C. L.; Urie, B. A.; Vivian, F. W.; Wright, J. E.; Walmsley, L. D.

### ORTHODONTIA

Crich, W. A.; Dinniwell, R. A.; Losada, N. A. M., McMachen, W. L.; Rushton, J. A.

### MATERIA MEDICA (ONLY)

Campbell, R.; Shepherd, F. H.

### MATERIA MEDICA & THERAPEUTICS

Armstrong, W. F.; Boyd, C. T.; Clifford, V. F.; Conrod, J. T.; Crich, W. A.; Galbraith, R. M.; Greacen, G. W.; Harlow, W. E.; Hingst, H. W.; Hubbell, L. E.; Jackman, V. M.; Jupp, A. D.; Langrille, R.; Lloyd, W. J. M.; Logan, G. M.; Massey, L. E.; Rammage, C. C.; Slack, C. S.; Strachan, C. L.; Storey, E.; Sweet, T. L. P.; Turnbull, G. V.; Urie, B. A.; Wilson, A. W.; Wright, J. E.

### MEDICINE & SURGERY

Crich, W. A.; Dinniwell, R. A.; Hillier, J. A.; Hare, L. F.; Jackson, P. A.; Jackson, J. E.; Lloyd, W. J. M.; McDougall, R. H.; McMachen, W. L.; Westlake, L. J.

### PATHOLOGY & BACTERIOLOGY

Clifford, V. F.; Crich, W. A.; Harlow, W. E.; Langrille, R.; Logan, G. M.; McDougall, R. H.; McMachen, W. L.; Rushton, J. A.; Somers, S. M.; Storey, E.; Turnbull, G. V.

### BACTERIOLOGY ONLY

Massey, L. E.; Rammage, C. C.; Rattle, W. F.; Robinson, J. A.; Simon, M. L.; Slack, C. S.

## JURISPRUDENCE &amp; ETHICS

Crich, W. A.; Dinniwell, R. A.; McDougall, R. H.; Mc-  
han, W. L.; Rushton, J. A.

## ANATOMY

Belden, T. N.; Browne, C. T.; Butcher, E. C.; Clifford,  
V. F.; Cornell, E. W.; Cross, S.; Greene, D. E.; Groff, E. E.;  
Hubbell, L. E.; Hughes, A. E.; Jupp, A. D.; Larmour, R.;  
Leach, W. H.; McBroom, R. E.; McVicar, G. D.; McKinnon,  
J. A.; Mitchell, H. W.; Newlove, R. A.; Reeves, H. W.;  
Trainor, J. C.; Thomas, W. G.; Urie, E. H.; Ward, J. C.;  
Wilson, A. W.

## PHYSIOLOGY &amp; HISTOLOGY

Armstrong, W. F.; Butcher, E. C.; Clifford, V. F.; Crich,  
W. A.; Dunlop, A. A.; Green, D. E.; Harlow, W. E.; Hennigar,  
R. E.; Hubbell, L. E.; Johnstone, L. A.; Larmour, R.; Logan,  
G. M.; MacDougall, G. G.; MacIntosh, C. E.; Mitchell, H. W.;  
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J. C.; Wilson, A. W.; Wright, J. E.

## PHYSIOLOGY ONLY

Carruthers, W. C.; Conrod, J. T.

## HISTOLOGY ONLY

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## PROSTHETIC DENTISTRY &amp; METALLURGY

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McDougall, R. H.; McInnes, A. C.; McMachen, W. L.; Massey,  
L. E.; Rudhton, J. A.; Simon, M. L.; Slack, C. S.; Strachan,  
C. L.; Urie, B. A.; Wright, J. E.

## METALLURGY

Boyd, C. T.

## PHYSICS &amp; CHEMISTRY

Armstrong, W. F.; Browne, E. C.; Carruthers, W. C.;  
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## Canadian Dental Association, Vancouver, August 4-7, 1924

### See Canada First

The meeting of the Canadian Dental Association this year is to be held in Vancouver on August 4th-7th. The committee is lining up a very good programme, and have the promise of some very fine essayists.

The Entertainment Committee are making special efforts to provide Eastern dentists with an entertainment ever to be remembered. Beautiful drives and wonderful scenery near



LAKE LOUISE

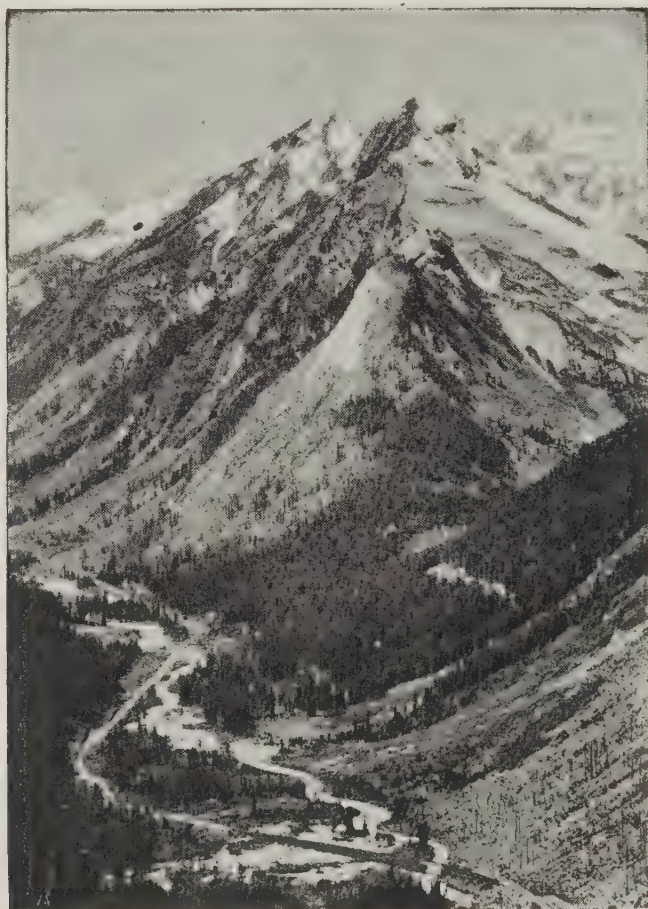
Vancouver are numerous and the committee are working to make this convention a very memorable one. When the boys from the West put on an entertainment they do not stop short of the best.

This visit to the Pacific Coast was planned by the Executive committee of the C.D.A. who felt that the objects for which the C.D.A. stands would be furthered by such a visit to other parts of the Dominion.



It is felt that such a trip, made at the best season of the year and during harvest time in the West, should prove a great stimulus to our interest in and appreciation of the vastness and resources of our great country. It is the duty of the professional man to see and become acquainted with his own country. The trip to the coast this year with the stop over privileges obtained from the railways at all the points of interest, and in the company of your colleagues, should make the excursion one of intense interest.

The Transportation Committee have made extensive enquiries concerning the different routes and fares, and a



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comprehensive report is given below. The stop over privileges obtained will allow members to stop wherever desired and for any desired time.

#### *Choice of Tours*

Tour No. 1: All rail both ways—C.P.R. Fare and lower berth, \$166.60.

Tour No. 2: Toronto—Lake one way—Calgary, Banff, Lake Louise, Okanogan Valley, Victoria, return to Revelstoke,



Kootenay, Medicine Hat, Winnipeg, Toronto—C.P.R. Fare and lower berth—\$169.95.

Tour No. 3: Toronto—Lake one way—Calgary, Banff, Lake Louise, Victoria, Seattle, Portland, Vancouver, Winnipeg, Toronto—C.P.R. Fare and lower berth—\$171.95.

Tour No. 4: Lake—Calgary, Banff, Lake Louise, Sicamous, Vancouver—return via St. Paul and Chicago, Toronto. Fare and lower berth—\$166.11.

Tour No. 5: Lake—Calgary, Banff, Lake Louise, Sicamous, Okanogan Valley, Victoria—C.P.R. Return via C.N.R., Prince Rupert, Jasper Park, Edmonton, Saskatoon, Winnipeg, Toronto. Fare and lower berth—\$191.05.

Tour No. 6: Lake—Banff, Revelstoke, Arrowhead, Robson West, Penticton, Okanogan Valley, Victoria, Portland, San Francisco, Los Angeles, Salt Lake, Denver, Chicago,, Toronto—C.P.R. Fare and lower berth—\$236.27.

Tour No. 7: Lake—Winnipeg, Saskatoon, Edmonton, Jasper Park, Prince Rupert, Vancouver. Return via—Jasper Park, Edmonton, Calgary, Saskatoon, Regina, Winnipeg, Cochrane, Toronto—C.N.R. Fare and lower berth—\$180.90.

Tour No. 8: Toronto, Sudbury, Port Arthur, Winnipeg, Saskatoon, Edmonton, Jasper Park, Prince Rupert, Vancouver, Victoria, Portland. Return via—Omaha, Chicago, Toronto—C.N.R. Fare and lower berth—\$193.81.

Tour No. 9: Going C.N.R. same as tour No. 8. Returning via—San Francisco, Los Angeles, Ed Paso, New Orleans, Atlanta, Ga., Washington, New York, Toronto. Fare and lower berth—\$231.60. This route entitles passenger to use of steamer between New Orleans and New York on payment of meals and berth charges.

All the above routes provide side trips which can be taken if time and expense are available. Corresponding low fares (not including berths) will be made from points East of Toronto under the same conditions as those applying from Toronto, from principal points approximately as follows:—

Halifax—\$170.45; St. Johns—\$165.10; Fredericton—\$163.60; Quebec—\$144.10; Montreal—\$133.85; Ottawa—\$128.05.

All of above fares good via Toronto.

#### SIDE-TRIPS

Many interesting side-trips are available. Among them is a motor trip of about 190 miles through the mountains and

lake scenery to Seattle. Also one to the north end of Vancouver Island through the lumbering and mining districts.

#### ALASKA

Side-trips may be made from Vancouver to Skagway, Alaska, via C.P.S.S. at fare of approximately \$80.00 (including meals and berth). This is a ten day trip allowing two full days in Skagway, (meals not included while laying in port) and may be extended from Skagway to Lake Atlin and return for \$50.00 additional which includes a side trip from Carcross to White Horse. Or from Skagway to Dawson and return at \$115.00 additional including meals and berth on Lake and River steamers.

Lake Atlin requires one week's time from Skagway and Dawson and return requires two weeks additional.

Any members wishing to avail themselves of the Alaska trip should communicate with the Transportation Committee as early as possible to insure accommodation, which is usually overcrowded.

All tickets will read Vancouver, Victoria, Seattle and Portland as final destinations without any extra fare.

All great Lake trips are \$10.00 extra, including meals, and berths, above all rail routes.

The steamer trip between Prince Rupert and Vancouver is \$13.00 extra, including meals and berths, above all rail routes.

C. Angus Kennedy, Chairman, Physicians and Surgeons Building, 86 Bloor Street West, Toronto.

W. B. Amy, 147 Bloor Street West, Toronto.

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A dental society known as the Kingston Dental Association has been formed in Kingston, the officers of which are as follows:—

Hon. President—Dr. R. E. Sparks; President—Dr. A. W. Winnett; Vice-Pres.—Dr. E. B. Sparks; Secretary—Dr. H. A. Stewart; Treasurer—Dr. W. O. Vrooman.

The above with Dr. C. Nash, Dr. S. H. Simpson, and Dr. J. L. Walsh act as an executive committee.

Drs. Harry S. Thomson and W. E. Cummer have delighted the association with pleasing and instructive addresses. There is no doubt that these meetings are filling a long-felt need in this community.





# Editorial

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Vol. XXXVI

TORONTO, JANUARY, 1924

No. 1

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## Dental Protective Association

For a number of years the Ontario Dental Association has had an advisory committee to which its members might apply for guidance in cases of suits brought against them for malpractice. The work of the committee had become so important and so valuable to the profession that, within the past year or two, the Board of Directors of the College have undertaken its guidance. Notwithstanding the help given by the Board, many of the profession find it wise to take out full insurance against accident in one of the regular insurance companies.

In this connection, it might be of interest to know how other professional organizations deal with such matters. The annual report of the Council of the London and Counties Protective Society gives a brief outline which is of great interest because of the high protection afforded at a very low rate. Dentists are accepted at the same rate and conditions as physicians. The annual fee of one pound gives protection up to £3,000. The society was organized in 1892 and has accumulated a surplus of £36,000 up to 1922, (note that they

have saved over £15,000 a year.) It is the large membership of over 6,000 which helps to keep down the annual dues and also makes it possible to spread the usefulness of the society. Both from the reported cases which are published to illustrate the variable character of the society's usefulness, and from the responsibilities assumed, as seen in section two, it is quite clear that there is no similar organization, or combination of organizations, in Canada which would give equal protection and advice at five times the cost.

Since the dentists in England have such a wide protection by being associated with the physicians, is there any reason why the Canadian dentists might not join hands with the Canadian Medical Protective Association and get greater protection all round for both professions.

Below is given a short statement of the organization:

1. The Annual subscription to the Society is 20/-, and there is an entrance fee of 10/- (except in the case of candidates applying within a year from the date of their registration) which is credited to the Society's Reserve Account.

2. The Society assumes responsibility for *all costs of the defence* of a member when the defence has been undertaken by the Society, on the grounds that the member has been attacked unjustly, or accused falsely, or interfered with, or injured otherwise in the course of the proper conduct of his professional work. The Society also, subject to the terms of the Articles of Association, insures members up to an amount of £3000 for any one member in any one year, and up to an aggregate amount of £24,000 for the whole Society in any one year, against the payment of *costs of the other side and against damages awarded on an adverse verdict* in any case which has been undertaken and carried to a conclusion by the Society.

3. The funds of the Society are administered under three separate accounts:—

No. i. *General Account*, which is credited with 15/- out of every annual subscription paid, together with monies received for advertisement in the annual report, etc., and any dividends from money invested temporarily. This Account is charged with all expenses of administration, and the cost of legal defence of members.

No. ii. *Special Insurance Account*, which is credited with 5/- out of every annual subscription paid, together with the dividends from the invested funds of the Account. Payment from this fund is made in settlement of adverse costs and damages awarded against members.

No. iii. *Reserve Account*, which is credited with entrance fees, any donations received from members, and with the dividends on investments of the Reserve Fund.

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## American Society of Orthodontists

The twenty-third annual meeting of the American Society of Orthodontists will be held at the Hotel Muehlebach, Kansas City, Missouri, on March 18, 19, 20 and 21st.



## Notes

If the nature of the materials to be used for any operation, as in making crowns, bridges or sets of artificial teeth, is specified beforehand, the dentist may not substitute other and different materials, even though they be as good or better. If he does, he is liable to lose all compensation for his services and may have to pay damages besides.

Paulsen says in his "Doctrine of Virtues and Duties": "I possess three treasures: these I guard and prize highly. The first is love of humanity; the second frugality; the third that I do not presume to be better than anybody else. Love of humanity, with this I can be fearless; frugality, therefore I can give to others; freedom from ambition, hence I have no one above me.

"Nowadays we desire love of humanity and are insolent: we despise economy and are wasteful: we despise modesty and strive to surpass everyone else. These paths lead to death."

A physician, (or dentist), should not base his practice on an exclusive dogma or sectarian system, for "sects" are implacable despots: to accept their thralldom is to take away all liberty from one's action and thought. (*Nicon, father of Galeni.*)

A dentist should be an upright man, instructed in the art of dentistry.

It is unprofessional to promise radical cures: to boast of cures and secret methods of treatment or remedies, to exhibit certificates of skill or success in the treatment of diseases; or to employ any methods to gain the attention of the public for the purpose of obtaining patients.

The medical code of ethics demands that the physician should expose, without fear or favor, before the proper medical or legal tribunal, corrupt or dishonest conduct of any of its members. The public seem to have a deep-rooted idea that the physician has the very opposite idea, to screen and protect him in his wrong-doing.

## Organization Committee of the Seventh International Dental Congress to be held in Philadelphia, 1926

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### JOURNAL

Otto U. King, 5 No. Wabash Ave., Chicago, Ill.; C. N. Johnson, 22 E. Washington St., Chicago.



## Book Reviews

ETHICS AND JURISPRUDENCE FOR DENTISTS: BY EDMOND NOYES, D.D.S., F.A.C.D., PROFESSOR OF ETHICS AND JURISPRUDENCE IN NORTHWESTERN UNIVERSITY DENTAL SCHOOL, CHICAGO, ILL. PRINTED AND BOUND BY W. B. CONKAY & Co., CHICAGO, 1923.

This, the second edition, has been much improved and much of it re-written. A chapter on specialists has been added and much copied from "The Principles of Medical Ethics and Law for the Dentist" by Leslie Childs. As dentistry more and more approaches the status of a profession, it must have guidance in its actions. This particular book has for its author one of the pillars of dentistry and has done much to place its standards of ethics and practice above reproach. Dentists should, from time to time, review the modern views of professional men on the foundations of dental ethics as they are set forth in short form in this book. No young man should begin practice without a careful reading of the subject of dental ethics. We would suggest that a chapter be added to the next edition on how a dentist and physician should consult on a case arising in either practice. The codes of ethics as proposed by dentists seem meagre and amateurish compared with those of the ancients. The section on jurisprudence is unusually good and up-to-date, precedent is the basis of many judgments, so dentists would do well to read many cases.

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ORAL-HYGIENE BY J. SIM WALLACE, D.S.C., M.D., L.D.S., LECTURER ON PREVENTIVE DENTISTRY, KING'S COLLEGE HOSPITAL, LONDON; PUBLISHED BY BAILLIERE, TINDALE AND COX, 8 HENRIETTA STREET, COVENT GARDEN, W.C. 2. PRICE 5s.

This is another of those little books issued by the publishers of this one and edited by Sim Wallace. Usually each book of from 75 to 125 pages presents one subject, but this one seems to cover a larger field in order to reach its goal. It contains some most interesting observations, much contentious matter and altogether a defence of the chemico-microbic theory of dental caries. Fermentable carbo-hydrates, which become attached to the outsides of the teeth, as opposed to any idea of the vitality of the tooth having anything to do with immunity or susceptibility, is what is defended. There seems to be some evidence that the author sets up a straw

man and then knocks it down. On page 7 appears this sentence: "Why, too, should ptyalin exist in the saliva from birth as we are told by some physiologists? While there may be a few physiologists who make such statements, their views have not influenced the general acceptance of the teaching that "ptyalin does not exist until such time as there are teeth to masticate starches," (Sim Wallace), "But it appears to have been during the three to six months immediately preceding the completion of the eruption of the puppies' teeth that the special feeding which was supposed to produce the hypoplasia took place." It can hardly be possible that an investigator of Mrs. Mellaby's experience would present a statement that the hypoplasia was developed after the tooth was calcified, as the author states. In fact we have failed to see it.

Mrs. Mellaby does quote Black correctly and then states that she hopes to show Black was wrong and says in the same sentence that structure plays an important part in dental caries. Sim Wallace takes her at her word and attacks what she says rather than what her experiments show.

It would seem from the author's view that there are pre-disposing causes of dental caries and exciting causes. Just as was taught twenty years ago. Structural defects are set down as one of the pre-disposing causes and surely whatever makes caries more likely to occur should be combatted, as Mrs. Mellaby shows in her experiments.

To summarize the author's views of caries, caries is a chemico-parasitical process, primarily involving the fermentation of carbo-hydrates. Unduly prolonged lodgment of carbo-hydrates under conditions is favorable to the production and accumulation of acid in sufficient strength to destroy the enamel. The exciting cause is primarily outside of and altogether independent of the histological structure of the teeth.

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# Dominion Dental Journal

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Vol. XXXVI.

TORONTO, FEBRUARY, 1924

No. 2

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## **The Relationship of Food Faults, Endocrine Disorder and Interstitial Gingivitis, with Remarks on Treatment**

*By E. G. Simmonds, M.R.C.S. (Eng.) L.R.C.P. (London)  
L.D.S.*

In two previous papers, published last year in the Dominion Dental Journal, the present writer has advocated the treatment of the constitutional causes of Interstitial Gingivitis by means of Opothrapy.

To recapitulate, the conclusions arrived at were:—

- (i) That the numerous constitutional causes of Interstitial Gingivitis, associated as they are with either toxamia or deficiency, are also causes of Endocrine derangement.
- (ii) That Endocrine derangement is an important factor in the causation of Interstitial Gingivitis.
- (iii) That we may rationally treat the constitutional causes of Interstitial Gingivitis by means of Organotherapy.

Reasons, pathological and clinical, were given in support of these contentions, and cases were cited, which had been treated by Thyroid Extract.

It is not my intention in the present communication to go into those reasons again, except to say that the pathology of Scurvy-Rickets is practically identical with that of Interstitial Gingivitis, as pointed out in a previous article, the essential features of the Morbid Anatomy of both disease being increased vascularity, hoemorrhages, and atrophy of bone.

The viewpoint taken in the present communication is that Interstitial Gingivitis is a deficiency disease plus—in some cases—infection. Assuming this to be so, one may argue “Why not treat it as such by supplying the missing food-factor or factors? Why advocate the use of Thyroid extract in the treatment?” The answer is, that the functional well-being

of the Endocrine organs is intimately bound up with the food supply, and that if the diet is at fault, these organs invariably suffer in consequence. As will be shown later on there is much evidence that the Endocrine organs may become permanently atrophied, in varying degrees.

But first let us consider what appears to be a remarkable similarity between the functions ascribed to the Vitamins and those ascribed to the Endocrine organs.

“Vitamins A and C appear to be associated with the Metabolism of Calcium”. (McCarrison) (2).

Sajous (3) refers to deficient calcium and Phosphorus metabolism which “deficient Thyro-parathyroid secretion entails.”

“Vitamin B appears to be associated with the chemical reactions and the functional perfections of cells, and particularly of nerve cells.” (McCarrison) (2).

In Hypo-thyroidia “owing to deficient oxidation, the rate of metabolism and nutrition in all tissues, particularly those rich in Phosphorus—such as the nervous system—is retarded.” (Sajous) (4).

McCarrison (5) writes “Whatever be the nature of Vitamins, they resemble in their action that of hormones, whose function is to stimulate Metabolism. This similarity of action is illustrated by the fact that such endocrine extracts as those of the duodenum, thyroid, and the anterior part of the pituitary body, can delay in their onset and alleviate, though not permanently dispel, the symptoms of polyneuritis in pigeons resulting from deprivation of Vitamin B.”

Anderson and Kulp (6)—in a series of experiments on chickens fed on polished rice—found that, “during Vitamin B starvation, up to the time of development of polyneuritis, there was reduction of heat production as much as 40 to 50 per cent. below normal in some cases. The administration of yeast extract relieved the symptoms of polyneuritis and caused a rapid rise in heat production.” McCarrison (7) notes the same phenomena in pigeons.

Compare this with the hypo-thermia well known to occur in Myxoedema, Hypo-thyroidism and Hypo-adrenalism. Sajous (8) states “An excess of adrenal secretion causes a rise of temperature.”

Again, in avitaminosis, McCarrison (9) notes the rough and scaly skin, and hair that becomes coarse and easily falls out, in monkeys fed on autoclaved rice.



These also are symptoms of Thyroid Insufficiency.

Once more, in noting the muscular atrophy and nerve degeneration in the coats of the stomach and bowels in monkeys fed on autoclaved food, McCarrison (10) writes, "The changes resulting in the stomach and duodenum in consequence of food deficiencies are comparable to those which occur as a result of Thyroid and Adrenal insufficiency, and may indeed be due in some part to the functional derangement of these endocrine organs consequent on food defects."

Compare also the following statements: "Deficiency of certain food factors leads to atrophy of all muscular tissue, as well as to disordered function or actual degeneration of nervous tissue throughout the body." (McCarrison) (11).

"All these symptoms (of hypo-thyroidia) are directly traceable to the existing impairment of oxidation and nutrition, the cardiac and vascular muscles suffering from this condition, as well as all the other organs." (Sajous) (12).

Further, as regards protection against invasion by organisms, McCarrison (13) writes, "I have shown, in connection with organisms of high virulence, that perfect food affords protection as adequately as segregation or immunization."

Protection against invasion by micro-organisms and toxins is also an important function of the Thyro-parathyroid apparatus and the Adrenals.

Sajous' views on this subject are well worth reading. (14).

As regards the adrenal glands in diets deficient in Vitamin C, McCarrison (15) says:

"A scorbutic diet gives rise in guinea pigs to great enlargement of the adrenal glands with great reduction in their epinephrine content: the enlargement is associated with degenerative and haemorrhagic changes in the organs. Impairment of function of the adrenal glands occurs before evidences of scurvy manifest themselves clinically. It is one of the most pre-eminent pathological features of experimentally produced scurvy in guinea-pigs."

The importance of this will readily be seen if—as is here supposed—interstitial gingivitis is a modified form of scurvy-rickets.

A recent contribution by Sajous (16) throws still more light on the close relationships existing between the vitamins and endocrine organs: he shows that all fruits and vegetables

contain adrenalin in the form of its vegetable equivalent Tyrosin, which he identifies as Vitamin C. His article is worth quoting at some length, as it has such an important bearing on the subject now under discussion. He writes:

“Various exudations and secretions, the saliva for instance, contain adreno-oxidase or oxidizing ferment, even through no red corpuscles are present. This can be shown by a test which I devised while studying the chemical identity of Vitamin C last year. This active agent proved to be adrenalin and adreno-oxidase, which in vegetables, fruit, etc., I found to be Tyrosin and Tyrosinase. The familiar guaiac test is well known to demonstrate the presence of an oxidase, but, as there are many of these, it became necessary to find one that would be specific to blood and plant respiratory pigments. After much searching I finally adopted what I termed the adrenalin—H<sub>2</sub>O<sub>2</sub> test, using as staining fluids nine parts of distilled water to one of hydrogen-peroxide in one bottle, and a 1:1000 adrenalin chloride solution in another. Whatever fluid or teased plant tissue is to be examined is first treated to a few drops of the adrenalin solution, then to the 1:3000 H<sub>2</sub>O<sub>2</sub> solution. With this test as used in one hundred and ten foods, I found it possible to determine the Vitamin C value of each, as represented by its content of Tyrosin. As these values corresponded with those of the biological tests in animals, we have good ground for belief that they are sound. What this test does is simply to enact “extra corpore” the process of blood oxidation in the lungs. We have seen that venous blood, under appropriate conditions, could be converted into arterial blood by the addition of adrenalin on exposing it to the air, thus proving the correction of my respiration theory.

Now, in plant life, tyrosin corresponds with the constituent of hoemoglobin which causes it to become converted into oxy-hoemoglobin. The Vitamin C value of a plant, therefore, is represented by its Tyrosin content, and it becomes red in proportion. Now, the turnip, the victim of the old saying “One cannot draw blood from a turnip,” can actually be shown to contain plenty of it, because it is rich in Tyrosin. The adrenalin—H<sub>2</sub>O<sub>2</sub> test causes it to become vivid red.

But so does saliva under the same test turn red, though less so, thus showing that it contains, like blood, the respiratory enzyme.

It will readily be seen what an important bearing this



communication has on the subject now being discussed. If Vitamin C is tyrosin, the vegetable equivalent of adrenalin, then two important facts stand out prominently—one in favor of my argument, and the other apparently opposed to it. If tyrosin or Vitamin C be equivalent to adrenalin, then one at least of the vitamins is actually the mother substance from which animal adrenalin is formed, and proves how intimate is the connection between this vitamin and the internal secretion of the adrenals.

On the other hand Sajous' adrenalin—H<sub>2</sub>O<sub>2</sub> test gives a pink color with saliva also. As this is a test for tyrosin or Vitamin C, are we to infer that saliva contains Vitamin C? If so, then the view that Interstitial Gingivitis is a modified form of scurvy-rickets would seem to be antagonized in the event that the saliva of undoubted cases of "pyorrhoea" showed the red reaction with this test.

I therefore proceeded to apply this test to the saliva of several patients who had typical "pyorrhoea", and found, to my surprise, that the adrenalin—H<sub>2</sub>O<sub>2</sub> test gave a pink reaction in every case examined. This seemed at first sight to be a very potent argument against the view that Interstitial Gingivitis is a form of scurvy—though not decisively against that view, as there might conceivably be only a partial deficiency of Vitamin C in these cases, yet sufficient in the body to give a pink reaction with this test. A partial deficiency of Vitamin C, extending over many years, would still produce the deficiency disease in a modified form, and that, after all, is all that has ever been claimed. No one supposes that Interstitial Gingivitis is scurvy in its classical or complete form.

However, even a partial "setback" makes one inquisitive: one wants to know if it is really so. Is Vitamin C really the equivalent of Tyrosin? Can any evidence be found in recent medical literature "pro or con."? is Vitamin C indicated by the adrenalin—H<sub>2</sub>O<sub>2</sub> test,

I proceeded to apply this test to many fruits and vegetables and found that a pink or red reaction was given in every case, *Except with orange and lemon juices!*

Now, as everyone knows, oranges and lemons are our most reliable source of the anti-scorbutic factor, Vitamin C, and one would expect any test for that Vitamin to be positive in the case of these fruits. I have applied the test to many samples of orange and lemon juice, as some are not so potent in anti-scorbutic properties as others: but in no case could

I get even a faint pink color. There may of course be a reason—possibly on account of the acidity of these juices—I don't know if that would mar the reaction. However, with that idea in view I neutralized the juices with different alkalis, and still could get no pink reaction with the adrenalin—H<sub>2</sub>O<sub>2</sub> test.

Incidentally, I may mention that orange and lemon juices give no blue reaction with Tincture of Guaiacum, although this reaction was invariably present in the many other fruit and vegetable tissues that I tested. I found however that, in the presence of dilute mineral acids, the guaiac test is always negative: whether certain organic acids have the same effect, I cannot say. It would seem, therefore, that orange and lemon juices give neither a pink reaction with adrenalin—H<sub>2</sub>O<sub>2</sub>, nor a blue reaction with Tincture of Guaiacum; and yet these juices are richest in Vitamin C!

On the other hand, the turnip, which is relatively poor in vitamin C, as compared with oranges or lemons, gives both reactions.

Moreover, I have found that yeast extract, which is not rich in Vitamin B, gives a pink color with the adrenalin-H<sub>2</sub>O<sub>2</sub> test: and yeast is not supposed to be a source of Vitamin C.

It would seem, therefore, that Vitamin B, and not Vitamin C, is indicated.

To use Sajous' own words, used in another connection "Of course errors of interpretation may have crept in, but should such be the case, please blame the tyro and not the master".

It is as an agnostic searching for knowledge that I make these or later observations which would seem to imply criticism. My knowledge of Bio-chemistry is most decidedly limited, and I might say "what does the Tyro know about Tyrosin?"

But the same remark would not apply to Vedder's (17) investigations. This observer finds "The anti-neuritic vitaliment B—has a nitrogenous base, but the anti-scorbutic vitaliment"—i.e. vitamin C—"is apparently non-nitrogenous, as the extract prepared, containing this vitaliment, contains practically no nitrogen, no proteids, and no amino-acids."

Now, as is well known, Tyrosin is an amino-acid, and therefore nitrogenous: so that Vedder's findings are diametrically opposed to those of Sajous. If Vitamin C is non-nitrogenous it cannot be Tyrosin.



The view that Tyrosin is closely related to adrenalin is not a new one: in an article on "Metabolism" published in 1913, Pembrey says: (18.) "Tyrosin is considered to be a mother substance of adrenalin."

In order to prove whether it is a water soluble substance that gives the red reaction with adrenalin-H<sub>2</sub>O<sub>2</sub>, I made the following test: A freshly picked apple was cut into slices and put into a bottle of distilled water, and left for twelve hours: the bottle was agitated from time to time, but the apple was not macerated. After twelve hours, the aqueous extract was filtered and the filtrate tested: it gave a pink color with adrenalin-H<sub>2</sub>O<sub>2</sub>. An ethereal extract of apple gave no pink reaction. Consequently, it is a water-soluble substance that gives the pink color.

Is it Vitamin B (not C) that is equivalent to Tyrosin?

As mentioned above, Vedder (17) finds that Vitamin B, or the "anti-neuritic vitaliment" as he terms it, is nitrogenous: so is Tyrosin.

According to the same observer, Vitamin C is non-nitrogenous. In that case it could not be equivalent to Tyrosin.

Of great interest, too, is the report of Muckenfus (19) (quoted by McCarrison) that "Vitamin B is present in small amount in normal saliva."

Vedder (20) concludes that there is no evidence that the antiscorbutic vitaliment is stored in the body as such: he found that it (Vitamin C) "is not present in the circulating blood."

If that is the case, Vitamin C would not be found in the saliva.

But enough has been said to show the similarity of action of the vitamins and internal secretions. Such a remarkable parallelism as exists between them, in their relations to metabolism, would seem to warrant the conclusion that the vitamins "act" through the endocrine organs by supplying them with the mother substances from which the internal secretions are elaborated.

This would necessitate an ample supply of vitamins, and healthy endocrine organs capable of making full use of them in order to supply the internal secretions necessary to keep the body in health. But are the endocrine organs always capable of performing their functions adequately? Is there not plenty of evidence that, under modern civilized conditions, man's endocrine organs are frequently deficient?

We know that in myœdema, infantile cretinism, and Ad-

dison's disease, there is absence or atrophy of secreting parenchyma of the glands concerned. But these are extreme cases, and not very common.

On the other hand, the "Hypo" conditions of the Thyroids and Adrenals, that is to say all the various degrees of deficiency that lie between normality and complete absence of parenchyma from these glands, are perhaps more common than is generally supposed. I refer to varying degrees of Hypo-thyroidism and Hypo-adrenalism.

Thus, in the preface to his "Studies in Deficiency Diseases," McCarrison writes:—

"I have been brought to the conclusion that much of the gastro-intestinal disorder so common at the present day, and much of the *endocrine disorder probably almost equally common*, (italics are mine) though less readily recognizable, are attributable to deficient and ill-balanced food."

Sajous (21) remarks that Hypo-thyroidia "is thought to be infrequent, but that is merely because it generally passes unrecognized." He further says (22) "Most authors refer to the disease as one of middle life, but this is an error. This type of Hypothyroidia occurs frequently among children, and represents a large proportion of those termed "backward" in the schools, and among those accused of being "lazy", "slow", and "dull." This applies as well to adolescence, particularly, as in children, in those who are abnormally stout."

Again, Sajous (23) writes "...the investigations of the Russell-Sage Foundation in thirty-one American cities have shown that over 20 per cent. of the children in their schools belonged to the "retarded" class, this proportion leaving out of all consideration the 17 per cent. of subjects in whom retardation was due to late entrance. In other words, approximately one-fifth of all the children in the public schools of the United States are more or less feeble-minded."

Manny (24) (quoted by McCarrison) states "In America, during the years 1917-18, it was estimated that about 30 per cent. of the school children were suffering from malnutrition."

Malnutrition, as we have seen, is a potent cause of endocrine derangement, especially when, as will be presently mentioned, associated with infection.

According to Sajous, (25) the causes of Hypo-thyroidia are hereditary and acquired: "The most important heredit-



ary causes which entail defective development, morphological and secretory, are syphilis, alcoholism and the gouty diathesis."

The causes of the acquired form of Hypo-thyroidia are: (25) "Too frequent repetition of pregnancy.....prolonged lactation.....Infectious diseases, especially those of childhood, including the milder ones measles and mumps, and likewise variola, and typhoid may also produce Hypo-thyroidia by causing interstitial and parenchymatous lesions, which lead to sclerosis and atrophy. The resulting phenomena are proportionate, of course, with the degree to which the functions of the thyroid are inhibited."

McCarrison (26) asserts that the Thyroid, in consequence of food deficiencies is "rendered peculiarly susceptible to injury by bacterial and toxic agencies, which may cause extensive degenerative changes in its cells."

Describing the pathological changes found in the Thyroids of monkeys fed on autoclaved rice the same observer writes: (27) "The most notable pathological appearance was found in animals presenting hæmic infections, a not infrequent consequence of this dietary. Then the organ showed marked congestion, desquamation of acinar epithelium, varying degrees of necrosis of parenchyma cells, and complete or partial disappearance of colloid."....."It is to these (infections) that pronounced congestion, necrosis, and denudation of the epithelium are due, and not.....to the dietetic deficiency, although such deficiency is indirectly responsible for them, since it renders the Thyroid very liable to attack from bacterial agencies."

Further on he says "A scorbutic diet gives rise in guinea-pigs to great enlargement of the Adrenals.....associated with degenerative and hoemorrhagic changes in these organs." (28).

Thus it seems fairly well established that—apart from purely functional depression—actual organic changes occur in the Thyroid and Adrenal glands, in the shape of necrosis of their parenchyma.

Now, in cases of necrosis of areas of glandular parenchyma, the lost secreting cells are not regenerated, but are replaced by fibrous tissue: the necrosed areas are lost permanently as far as any secretory activity is concerned, and the general tendency is for further atrophy of parenchyma to take place, consequent on contraction of the fibrous tissue.

We know that in old age, the adrenal glands are

shrunk and fibrous. So are the Thyroids. Hale-White (29.) found this as early as the fiftieth year in 70 Thyroids examined by him.

Moreover, the symptoms of premature senility are those of Hypo-Thyroidism and Hypo-adrenalism.

How frequently we can find many of the stigmata of these diseases in cases of Interstitial Gingivitis!

Before considering the conclusions arrived at, I would like to make a few remarks on the subject of feeding experiments on animals. No doubt both from a scientific and practical point of view, their value has been enormous, in rediscovering a lost art, viz. what to eat, what to leave untouched, and how much to eat. The monkeys knew all about this, by instinct, years ago; but we, the Superior Race, have to refer to the monkeys, by way of half starving them, in order to discover why we are such a sick lot (cheers and much laughter from the denizens of the jungle).

The tendency at the present day is to give such experimentation precedence over clinical observation.

In microscopical work we use both a low power objective: feeding experiments on animals,—under comparatively simple conditions, are comparable to the use of a low power in the microscope, in that they survey the field and give general indications, but do not give the minute details which we wish to know. For the latter purpose, a high power is necessary—the high power of clinical observation and experience—and unless that is used, we are likely to be misled by what we observe under the low power alone.

In laboratory experiments the animals that are used are healthy at the outset, whereas in practice we are dealing—in all too many cases—with persons who for many years, or all their previous life, have been the victims of ill-balanced diets, with varying degrees of avitaminosis, plus many and varied infections, acute and chronic, the very conditions most calculated to produce atrophy of the endocrine organs. Consequently, deductions drawn from simple feeding experiments on previously healthy animals may be erroneous when applied to human beings under present civilized conditions. It would be very difficult to reproduce in animals the exact conditions under which modern civilized man has his being, even when due allowance is made as regards the difference of longevity of man and animals.

Judging from the published results observed after feeding experiments on animals, one might imagine that it would



be a simple matter to combat the deficiency diseases successfully in man, simply by supplying the missing or deficient food factor or factors supposed to be responsible for the particular disease in question.

But in practice it is found that the problem is not so easily solved as that, insomuch so that some clinical observers have cast doubts on the Vitamin theory of the causation of certain deficiency diseases.

The results observed after feeding previously healthy animals on deficient dietaries can logically be compared with the effects produced when a previously healthy human being uses a like deficient dietary. But how many really healthy people are there nowadays among the civilized white races? When, during the world war, of the Class 1 men called to the colors in the United States, after December, 1917, "47 per cent. had a physical defect of sufficient importance to note on the reports of the examination.....of all Class 1 men 21 per cent. were found physically unfit for all military service, or, in other words, more than one young man in five was physically unfit to perform any type of military service either at home or abroad." (30).

Food faults and concurrent infections lead to necrosis and atrophy of the endocrine organs: but, of the two, it appears that the infections are the more potent in that direction. Consider the long list of infections that hit mankind from childhood up! Can these be produced experimentally in animals, so that their effects combined with those of food deficiencies may be gauged?

We have seen above that Hypo thyroidism may be hereditary—the sins of the fathers visited on the children. The child then proceeds to acquire certain infectious diseases on his own account, and the bottle is thrust upon him instead of the breast. Measles, mumps, pertussis, diphtheria, scarlatina, tonsilitis, tuberculosis, and many others, next claim him as a victim: later may come syphilis, focal infections, chronic constipation with its resultant auto-intoxication, cystitis, pyclitis, et al., with influenza many times repeated. This is but a short list of the possible competitors in the Degeneration Sweepstakes, and each one adds its quota of exhaustion and degeneration to the Endocrine organs. And all the time there may be varying degrees of avitaminosis and ill balanced diets, from the bottle fed infant onwards, throughout life.

Another point! has the question of habitual overfeeding

been considered sufficiently? Man is notoriously a gross feeder. Has the overfeeding and consequent auto-intoxication of man ever been reproduced experimentally in animals, and the effects on the endocrine organs observed?

Again, chronic alcoholism is not so very uncommon in man. What would be the combined effects of, say, bootleg whiskey, deficient diet, and infection (any sort, but syphilis for choice) on a monkey's endocrine organs?

If all the combinations and permutations of deficient and ill-balanced dietaries, infections, poisons, drugs and alcohol, auto-intoxications, and excesses generally that man indulges in,—if all these varied and complex conditions could be reproduced experimentally in animals, then perchance the endocrine organs, as factors in the etiology of disease, might not be so lightly dismissed as of little or no account, as is so frequently done, as a result of comparatively simple feeding experiments on previously healthy animals.

The average human seems to be everlastingly engaged in throwing off some poison or other, and, while dissipating his energy in the task, seeks to renew his strength for the perpetual combat by gorging himself on a deficient and ill-balanced diet. If this be civilization, how the monkeys must laugh!

The endocrine organs were never planned to endure such a burden, and small wonder if they should crack under the strain! Truly has it been said:

“Man does not die  
He kills himself” (Seneca).

It has been noted above how remarkable is the parallelism that exists between the Vitamins and Endocrine organs as to their functions, as to the pathological results of their deficiencies, and as to the results obtained by administering them in diseased conditions. The symptoms and pathology of avitaminosis are those of Endocrine Insufficiency.

It has been shown that one, at least, of the Vitamins, i.e., Tyrosin, may be actually the mother substance of Adrenalin.

It seems possible, therefore, that the vitamins may be something more than hormones, and actually the raw material from which the Endocrine organs elaborate their internal secretions, or, in other words, that they “act” through the Endocrine glands.

So that, given a perfect diet and healthy Endocrine organs, all should be well with us (barring accidents). In the treatment of deficiency diseases careful attention to diet should be all that is required, provided that the Endocrine



organs are merely functionally depressed, and not organically diseased.

But, we have also seen above that there may be, and very often is, permanent atrophy, in varying degrees, of the Endocrine organs.

Supposing that, in a given case, the Thyroid gland has atrophied, so that there is not sufficient parenchyma left to produce the necessary amount of its Internal Secretion. How, in such case, can the Vitamins or other food factors stimulate what isn't there to be stimulated? If the secreting cells have been largely destroyed, and replaced by fibrous tissue, only such healthy parenchyma as might remain could be activated by dietary treatment. One cannot gather grapes from thorns, nor figs from thistles: neither is there any known means of coaxing an Internal Secretion from fibrous tissue. It would seem that the extent of improvement would depend upon the amount of healthy endocrine parenchyma, when dietary treatment alone is employed in treating deficiency diseases.

No one would expect to cure Myœdema or Infantile Cretinism by dietetic treatment alone, because there is no Thyroid parenchyma capable of being activated, in those conditions: the deficient Thyroid secretion can be made good only by the administration of Thyroid extract. Why should not the same argument hold good when there is only partial loss of parenchyma, as in Hypo-thyroidism and Hypo-adrenalism? In these conditions, dietetic treatment, with Vitamins in full force, can activate only such healthy parenchyma as might remain, in any given case, but could go no further. Such healthy parenchyma as might remain, having produced all the Internal Secretion of which it was capable, and there still being a deficiency, that deficiency would have to be made good by organotherapy.

Hence the "raison d'être" of this communication and my contention that, in the treatment of the constitutional causes of Interstitial Gingivitis, a deficiency disease akin to scurvy-Rickets, dietetic treatment alone is not sufficient to effect a cure in very many cases, because of degenerative changes in the Endocrine glands, the degree of Endocrine Insufficiency varying in different cases.

In the treatment of the constitutional causes of Interstitial Gingivitis by Thyroid Extract, I have frequently noted improvement just so long as the extract was being taken, also that withdrawal of the extract was frequently followed by

relapse: a further administration of Thyroid extract would be followed by improvement, and so on, the condition of the gingivitis and the general progress of the case depending on whether the Thyroid extract was being taken or not. Consequently, I believe that in many cases, in addition to a well-balanced diet, the Thyroid extract treatment must be carried out for many years, and, in some cases, for the rest of the patient's life.

A point of importance is to commence with small doses, afterwards increasing or decreasing the dose as the case may be:  $\frac{1}{2}$  grain of Thyroid extract twice a day is sufficient to begin with, in the case of an adult, though it must be remembered that the preparations of different manufacturers are not all of the same strength. Whether even better results might be obtained by Adrenal Organotherapy or by plurigland preparations I cannot say: the probability is that in some cases the adrenals are chiefly at fault, in others the Thyroid chiefly; but in most, the former is as likely to be involved equally with the latter. I have spoken of Thyroid Extract treatment alone, merely because it is the only branch of Organotherapy with which I have had experience, not because I think the Thyroid is the only insufficient gland in these cases.

But, to quote Sajous 31. "When we administer Thyroid gland, which combines the actions of the Thyroid and parathyroids, the following effects are produced: it renders the phosphorus of all tissues, and all free substances such as bacteria, wastes, toxins, etc., containing phosphorus, more inflammable or sensitive to the action of the oxygen in the blood. As this applies particularly to nerves and nerve centres (all of which are especially rich in phosphorus) the adrenal centre and therefore the adrenals themselves are excited....."

So that, provided the adrenals are in such a condition, organically, that they are capable of increased secretion when excited, the administration of Thyroid Extract indirectly produces an increase of Adrenal Secretion.

The treatment of the constitutional causes of Interstitial Gingivitis by Thyroid Extract is indicated whatever the cause may be, ie., whether due to deficient diet or toxoemia, or poison of any kind. This was referred to in a former article (1) and will not be gone into again now.

Of course local treatment in the mouth must be employed if indicated: any source of local irritation, mechanical or



bacterial, must be removed. Just as the local treatment of a syphilitic germinations ulcer will not cure syphilis, so also the local treatment, alone, of Interstitial Gingivitis will not cure the constitutional causes of the disease. Of course it goes without saying, that any form of chronic poisoning, such as drug or metal poisoning, or chronic alcoholism, must be treated by removal of the poison, in addition to the general treatment advocated above.

A series of observations on Basal Metabolism, in the case of "pyorrhoea" patients, would be well worth making. I can only make the suggestion in the hope that some of our research workers may take up such an investigation, and thus throw more light on the subject.

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## SELECTIONS

**Tooth Troubles and Their Relation to Systemic Troubles***Value of Dental Service*

The mouth is one of the three chief points at which systemic disease may have its inception. The other two are the tonsils and the nasal cavity. In considering the decay of a tooth or the abscess at the base of a tooth with a non-vital pulp or the pyorrhea condition of the gums, the laity lose sight of the intimate relationship of these conditions to other parts of the body. This is due to the lack of public information on this subject and also to the painless or relatively painless condition of the teeth and gums, when in this condition, in contrast to the pain and inconvenience experienced in other parts of the body during the time the exciting cause is allowed to run undetected.

Dr. Duke, of Kansas City, Missouri, has made a long series of clinical observations on this subject, and reports presence of streptococci bacteria in the blood of people having abscessed teeth. These bacteria affect the heart and are known to be the bacteria of joint inflammation—rheumatism. Physicians have recognized that these same conditions are brought on by septic formation in the tonsils. The tonsils have had their share of investigation, and the operation of removal of the tonsils has become a necessary and popular one wherever the tonsils can not be made normal by treatment. The tonsils have also been found to be a cause of deafness. Otherwise the tooth poison from the abscess going directly into the blood produces deafness, and in some cases defective eyesight. The streptococci take up their work where the patient is weakest, or in some part that is below normal at the time the streptococci get into the blood stream from the tooth abscess. The liver is another point of attack. So there are quite a number of systemic organs that are directly affected by the poison of pus from the tooth abscess.

Dr. Hartzell, of Minneapolis, Minnesota, has long been an original investigator of the phenomena of Systemic Disorders Due to Defective Mouth Conditions. On account of his ability and inclination in following up this subject he was given the task of reporting on this subject for the Research Branch of the American Dental Association. Dr. Hartzell was the first American physician and dentist (he is both) to



show the connection between the abscessed tooth and rheumatism. He has made complete explanation of this and also reports, as does Dr. Duke, that the following systemic diseases, rheumatism, arthritis, neuritis, iritis and other eye inflammations, vegetative endocarditis, myocarditis, peritonitis, meningitis, gastric and duodenal ulcer, pancreatitis, pneumonia, pleurisy, etc., are often of streptococcic origin due to direct infection from chronic points of infection (foci) as pyorrhea and abscessed teeth.

Dr. Hoff, of Ann Arbor, Michigan, reports that it has long been supposed that rheumatism was the result of infection, but nothing definite as to the source of the infection was clearly made out until recent years. As most internal infections have of late been connected in some way with the nose, mouth and throat, much experimentation has resulted in tracing these infections directly to the tonsils and teeth. At first it was thought that the infection was taken into the system through the stomach and alimentary canal, from open sores in the tonsils, and suppurating gums, alveolar abscesses, etc. But, as all such infection would be subjected to the destructive influence, as the gastric and intestinal juices before absorption, it does not seem probable that there could be enough of the active virus absorbed through this means to account for the exterior disturbances often encountered. At the present time it is believed that so far as the teeth and tonsils are at fault the infectious virus is absorbed directly from the tissues by the absorbent vessels and is carried through the lymph and blood vessels to the joints and muscle tissues where it is deposited or finds favorable conditions for development, and so local points of disease are established in various tissues throughout the body where conditions favor development of these micro-organisms which cause this particular disease. It is usual to find rheumatism affections in the joints and muscle tissues, which become pathologic, that is painful, or even in some instances abscessed. If it should locate for instance, as it frequently does, in the heart muscle, it becomes a most serious affection and may be fatal in a short time; or in some other tissue not so highly specialized, it may assume chronic form and only annoy without fatal results.

Dr. Goadby, of England, in 1912, reported his observations on Oral Sepsis, and his findings were the same as those already mentioned. The pus in the abscess at the root of a tooth is pressed by force of the jaw pressure in eating and

gains entry into the blood by veins and arterics that surround the pus sack. At every mealtime this occurs similar to a hypodermic of streptococci three times a day. This process goes on unthought of by the patient. The rheumatism, the low pulse, low blood count, headache, are doctored for the malady, not for the removal of the cause, unless the physician has the patient consult the dentist. In the case of a blind abscess under a filled devitalized tooth or teeth an X-Ray would disclose the abscess. In pyorrhea conditions the spongy gums and pus pockets would be observable to the eye. The ingress into the blood direct from tooth abscess of such regular amounts of streptococcus and staphylococcus bacteria lower the value of the blood, cause it to be less vital, and the heart becomes weaker and altered in action, taking the pep out of the patient. In severe cases vegetative endocarditis takes place. The picture of this condition of the heart looks like cobwebs stretched all across every way over the valves.

Dr. Barber, of Chicago, Illinois, has written at length upon the value of good teeth as the necessary requisite for good health through good digestion. Many people by loss of teeth, through decay and extraction, have not enough teeth to properly masticate the required food. In some cases the articulation of the teeth has changed, so that occluding teeth do not actually touch each other in biting. This allows the food to go to the stomach in an indigestible form and makes digestion incomplete, causing indigestion. This brings up the case of Horace Fletcher, a member of the American Association for the Advancement of Science, who on account of indigestion was at fifty given up to die. He went to his dentist and was advised to have his teeth regulated so he could properly masticate the food and obtain one hundred per cent. digestion. With this done he paid particular mental attention to his eating, seeing to it that he did not swallow the food until he had thoroughly chewed it. He wrote some about this subject also and the newspapers took it up, and this publicity resulted in the expression "Fletcherize." Mr. Fletcher at last reports was over seventy.

The foregoing points very plainly to the value of Preventative Dentistry, and as already explained elsewhere to do this it is necessary to call the patient periodically and perform the dental prophylaxis. Greater public education is needed on the value of this work. It is so easy to prevent dental troubles, but after they have gained a start it takes an operation to stop them. Prevention through periodical prophylaxis is the best system.



## Regional Anaesthesia in Prolonged Dental Operations

In the course of an interesting paper on impacted lower third molars by Mr. A. M. Nodine, which appeared in the *Dental Record* for October, the writer discusses the choice of anæsthetic, and gives several reasons for using regional anæsthesia in preference to a general anæsthetic. A point on which he lays great stress is the fact the patient is conscious and can assist the operator; as he puts it epigrammatically, "under general anæsthesia the patient is a liability; under regional anæsthesia the patient is an asset." There is a sufficiency of truth in this way of putting it to make it sound attractive. There is no doubt that the patient if conscious can help the operator, while the use of regional anæsthesia allows the operation to be performed in a dental chair in a position most favourable to the dental surgeon, and in contrast to the recumbent position necessary if a general anæsthetic is employed.

There is, however, another aspect of the question which might be discussed, and that is the effect on the nervous system of the patient of a severe operation on the jaw performed under regional anæsthesia. Even an extraction of moderate difficulty may entail a considerable amount of mental strain to the patient, although the anæsthesia may be completely successful in abolishing pain. It may not be apparent at the time, for the patient may "key" himself up to the ordeal, but subsequently there may be a considerable reaction. In so severe an operation as the removal of an impacted lower third molar, which may take a long time and necessitate the cutting away of a considerable amount of bone, one would imagine that the reactionary shock might be proportionately great. Though the afferent paths to the nerve centres are blocked by the local anæsthetic, yet sight and hearing are busily conveying stimuli to the brain during the operation, and may not attain their maximum effect until some time after the operation is completed. Even the effort of the patient to co-operate with the dental surgeon, a point mentioned by Mr. Nodine, may put a considerable strain on the patient. A medical man who had had an iridectomy performed under local anæsthesia has told us that his chief anxiety was not the fear of pain but the fear that he might not be able to keep the eye in the position desired by the surgeon and thus endanger the success of the operation. The resultant

mental fatigue was considerable. Crile in his anoci-association method uses both general and local anæsthesia, the former to abolish consciousness, the latter to cut off harmful stimuli to the brain from the area of operation. By this means he claims that shock is diminished. In this method the use of local anæsthesia is ancillary to general anæsthesia; by analogy it might seem reasonable to use general anæsthesia, or at least an injection sufficient to blunt the consciousness, as an adjunct to regional anæsthesia for operations on the jaw. It is true that Mr. Nodine advises the prior administration of a nerve sedative to nervous patients, but if this is to be sufficient to affect appreciably the stimuli conveyed by consciousness, then it must impair the patient's power to co-operate with the dental surgeon. It may also be doubted whether under these conditions the consulting room of the dental surgeon is a fit place to perform the operation. We are aware that these objections we have stated are somewhat hypothetical, for the post-operative results of dental operations performed under regional anæsthesia have not received much consideration in respect to their possible effect on the nervous system. We have raised this point in the hope that this question will receive investigation, for it is not one which should be ignored.

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## A Few of the New Viewpoints of Dental Pathology

*Abstracted from volumes by Weston A. Price on "Dental Infections, Oral and Systemic" and "Dental Infections and the Degenerative Diseases."*

(a) In the consideration of dental focal infections in the past, much emphasis has been put on the biological strain of organism which has chanced to get access to that focus. The extent and nature of the local and systemic reactions have been looked upon as largely functions of that invading organism. The author submits evidence for consideration, which suggests to him that the organisms, which are chiefly involved in dental infections: namely, streptococci, obtain their elective localization qualities, when such exist, very largely from the host, which furnishes to them their nutriment and environment, and that they do this largely through their wonderful capacity for adaptation.

(b) With regard to root end infections, the current and general conception seems to be that the extent of an area of



absorption about the apex of an infected tooth root, when such exists, is directly a measure of the quantity of that infection and therefore a measure of the danger. The author believes this to be a misapprehension and misinterpretation. The new data indicates to him that it does not represent the activity of the invading organism but does express the reactivity of the invaded host to that foreign irritant, the invading organism.

(c) The presumption in current dental diagnosis seems, in general, to be that potentially equivalent, infected teeth will, in different individuals, be attended by similar local expressions about those infected teeth. The data developed in his researches indicate to him that potentially equivalent, infected teeth will, in different individuals, be attended by very different types of local structural changes in the supporting tissues.

(d) It is currently understood, he believes, that the safety of the host is inversely proportional to the evidence of reaction about infected teeth. For example, it is presumed that those teeth with large areas of rarefaction about their apices indicate that those patients are potentially in danger because of a large amount of infection, and those with little or no evidence of reaction about the teeth are in relatively little danger. The data, which he presents to you, clearly indicates to him that with a given dental infection the safety of the host is directly proportional to his capacity for local reaction; and, conversely, his danger is in direct proportion to his lack of capacity to make a local reaction. With a given infected tooth, therefore, a vigorous local reaction means, incidentally, a liberal destruction of bone for the development of an effective defensive quarantine tissue immediately about the source of that infection. He believes that it is at the time that this quarantine tissue ceases to function and breaks down, that the host comes to be in danger, for now the warfare, which up to this time has been waged to a finish immediately about the infected tooth, must be waged in other structures of the body, and that tissue tends to break first, which is most weakened by overload or handicapped by lack of inherited defensive forces.

(e) It may be that with this given infected tooth, the patient may be one who never established an adequate local quarantine, and he never was safe and therefore never established a zone of rarefaction about the tooth or, if any, a very slight and inadequate one. The factor of safety of this type of person is being grossly misjudged, and often those indivi-

duals most needing rescue are mistakenly dismissed as having no source of serious local infection.

(f) The data, which he presents to you, reveal to him that those individuals, who develop the large apical areas because of their good capacity for reaction to an irritant, prove to be the ones who tend to develop periodontoclasia or so-called pyorrhea alveolaris. They seldom have rheumatic group lesions. That this is not merely a coincidence, but a fundamental law of a defensive reaction, is clearly established in the accompanying data.

(g) Decalcification and calcification processes, as reactions to irritants, have direct significance because they are a fundamental part of the defensive reactions.

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## SOCIETIES

### **The Dental Society of New York**

The 56th annual meeting of the Dental Society of the State of New York will be held at Kalurah Temple, Binghamton, N.Y., May 7th, 8th, 9th and 10th, 1924.

The literary exercises and exhibits will be held at Kalurah Temple. Dr. Thomas R. Cullen, of Oswego, N.Y., is Chairman of the Exhibits Committee, and those desiring space should communicate with him immediately.

The Executive Council will convene for the transaction of the business of the society Tuesday, May 6th, at 3.00 P.M.

Hotel reservations should be made direct with the hotel management. Headquarters Hotel Arlington.

Every effort is being put forth to make this meeting one of the most attractive in the history of the society.

A cordial invitation is extended to all ethical practitioners. Admission to literary meetings and clinics may be secured by presenting membership cards in State or National Societies.

For further information and programs address A. P. Burkhart, Secretary, 57 E. Genesee St., Auburn, N. Y.



## Classification of the Dental Schools of the United States

*By The Dental Educational Council of America*

JULY 1, 1923

### CLASS A

University of Southern California, College of Dentistry, Los Angeles, Calif.

Chicago College of Dental Surgery, Chicago, Ill.

Northwestern University Dental School, Chicago, Ill.

University of Illinois, College of Dentistry, Chicago, Ill.

State University of Iowa, College of Dentistry, Iowa City, Iowa.

University of Louisville, College of Dentistry, Louisville, Ky.

Harvard University Dental School, Boston, Mass.

Tufts College, Dental School, Boston, Mass.

University of Michigan, College of Dental Surgery, Ann Arbor, Mich.

University of Minnesota, College of Dentistry, Minneapolis, Minn.

St. Louis University School of Dentistry, St. Louis, Mo.

Washington University School of Dentistry, St. Louis, Mo.

Creighton University, College of Dentistry, Omaha, Nebraska.

University of Buffalo, College of Dentistry, Buffalo, N. Y.

Western Reserve University Dental School, Cleveland, Ohio.

Thomas W. Evans Museum and Dental Institute, School of Dentistry, University of Pennsylvania, Philadelphia, Pa.

University of Pittsburgh, School of Dentistry, Pittsburgh, Pa.

Vanderbilt University, School of Dentistry, Nashville, Tenn.

Baylor University, College of Dentistry, Dallas, Texas.

Marquette University, College of Dentistry, Milwaukee, Wis.

### CLASS B

University of Denver, School of Dentistry, Denver, Colo. (Formerly Colorado College of Dental Surgery).

Georgetown University, Dental Department, Washington, D. C.

Howard University Dental College, Washington, D. C.  
Atlanta-Southern Dental College, Atlanta, Ga.

Loyola University, School of Dentistry, New Orleans,  
La.

Tulane University of Louisiana, School of Dentistry,  
New Orleans, La.

University of Maryland, School of Dentistry, Baltimore,  
Md. (Baltimore College of Dental Surgery was merged with  
it on June 15, 1923).

Kansas City-Western Dental College, Kansas City, Mo.

University of Nebraska, College of Dentistry, Lincoln,  
Neb.

Ohio State University, College of Dentistry, Columbus,  
Ohio.

North Pacific College of Dentistry, Portland, Oregon.

Temple University Dental School, Philadelphia, Pa.  
(Formerly Philadelphia Dental College).

Meharry Dental College, Nashville, Tenn.

University of Tennessee, College of Dentistry, Memphis,  
Tenn.

Medical College of Virginia, School of Dentistry, Rich-  
mond, Va.

#### CLASS C

Cincinnati College of Dental Surgery, Cincinnati, Ohio.

Texas Dental College, Houston, Texas.

#### *CLASSIFICATION POSTPONED*

University of California, Dental Department, San Fran-  
cisco, Calif. (Classification postponed until September 15,  
1923).

College of Physicians and Surgeons of San Francisco,  
San Francisco, Calif. (Classification postponed until Sep-  
tember 15, 1923.)

Indiana Dental College, Indianapolis, Ind. (Classifica-  
tion postponed until September 15, 1923).

Columbia University School of Dentistry, New York, N.  
Y. (Incorporation of the College of Dental and Oral Surg-  
ery of New York, and reorganization of the united schools,  
in progress).

New York College of Dentistry, New York, N. Y. (Mer-  
ger with New York University in process of negotiation).

Ohio College of Dental Surgery, Cincinnati, Ohio. (Affil-  
iated with the University of Cincinnati on July 1, 1923; early  
complete merger in prospect).



*MERGED RECENTLY WITH UNIVERSITIES*

Colorado College of Dental Surgery. (Merged with Denver University, June 15, 1922).

Baltimore College of Dental Surgery, Baltimore, Md. (Merged with the Dental Department of the University of Maryland, June 15, 1923).

College of Dental and Oral Surgery of New York, New York, N. Y. (United with the School of Dentistry of Columbia University on July 1, 1923).

*DISCONTINUED SINCE THE PUBLICATION OF THE LAST PREVIOUS CLASSIFICATION IN 1920*

(1921) George Washington University, Dental School, Washington, D. C.

(1923) University of West Tennessee, Dental Department, Memphis, Tenn.

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## **Constitution and By-laws of the American Dental Golf Association**

**NAME**—The name of this Association shall be The American Dental Golf Association.

**DIRECTORS**—This organization shall be governed by six directors, consisting of the President, Vice President, Secretary-Treasurer and an Executive Committee of three, to be chosen for one, two and three years respectively. They shall hold office until their successors shall be elected and qualify and their duties shall be such as usually pertain to the respective offices. The retiring President will replace the Director who has held office for one year.

**FUNDS**—To provide funds for administration and for advancement on tournament expenses, the following dues and fees are required.

1st—A Membership Fee of \$3.00 for the general funds of the Association, to be paid upon enrollment as a member of the Association. This may be done at any time. The payment of this perpetuates the membership. Once a member, always a member.

2nd—A Playing Fee of \$2.00 for the Tournament Fund of the Association. This fee, and all hereafter, are payable at the first tee and shall be paid only in the event that the member enter the tournament, the idea being that aside

from the enrollment fee all expenses are paid by those who participate in any year.

3rd—The Tournament Fees: There shall be paid then, at the first tee, by all entrants to the tournament, fees as follows.

- (a) The Playing Fee of \$2.00 above mentioned.
- (b) The Membership Fee of \$3.00 above mentioned, if not already a member.
- (c) The Greens' Fee, charged by the local club as arranged for by the local committee.
- (d) The Dinner Fee, as determined by the local committee in charge.

MEMBERSHIP—Any male member of the A.D.A. in good standing, who has the degree of D.D.S., becomes automatically a member of this Association upon acceptance of its By-Laws and payment of the Membership Fee. Ethical dentists licensed to practice in other countries, who may be attending the meetings of the A.D.A., may take part in the tournament as guests.

PLAY—No member shall enter except upon payment of the prescribed fees.

THE TOURNAMENT shall be held either just before, or during, or just after the Annual Meeting of the A.D.A. the time and place to be determined in advance by the Directors, co-operating with a local committee of their own choosing; provided that the time shall not be in conflict with the scientific program of the A.D.A.

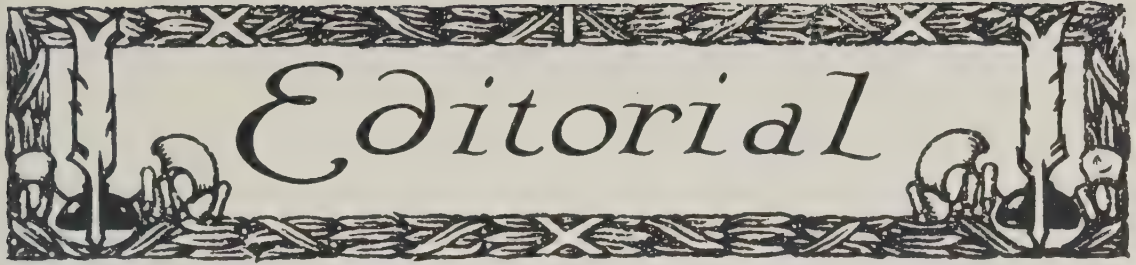
HANDICAPS—Handicaps shall be limited to 24; members playing in any competition must play on their lowest club handicap and when playing on their own club course shall be penalized two strokes.

THE ANNUAL DINNER AND MEETING shall be held on the evening previous, or on the day of the tournament.

ACCOUNTS—No accounts shall be kept with the members. All privileges automatically follow compliance with the provisions of By-Laws.

AMENDMENTS—These By-Laws may be amended at any annual meeting by a three-quarter vote of the members present; or between meetings by a three-quarters vote of the members who register their vote by mail within two weeks after a call therefor is made.





# Editorial

EDITOR:

**A. E. Webster, M.D., D.D.S., M.D.S., Toronto, Canada.**

ASSOCIATE EDITORS:

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BRITISH COLUMBIA—E. H. Hetherington, D.D.S., L.D.S., Victoria.

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TORONTO, FEBRUARY, 1924

No. 2

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## A Gift to Medical and Dental Education

Mrs. A. Montgomery Ward, Chicago, has made a gift of \$3,000,000 to establish a medical centre on the shore of Lake Michigan within one mile of the centre of the city of Chicago. In this centre will be housed the North Western Medical and Dental Schools. Its activities will include imparting available medical and related knowledge to students, internes, post-graduates, nurses, hygienists and social service workers, advancing the frontiers of medical and related knowledge through research, acquiring knowledge of the natural history of disease, leading to its prevention and treatment, rendering community health service by periodical medical examinations, etc.

Hereafter the North Western Dental School will limit its dental students to five hundred, with one hundred in the graduate school, leading to the master's degree.

It must be noticed from the above quotations that dentistry is recognized as a part of medicine, and because the dental school is part of the North Western University, it has come into its share of this munificent gift. There are no large direct gifts yet made towards dental education itself,

because of its association with medicine, or as a faculty of a university, it has frequently benefited. The dental faculties of both McGill and Dalhousie have so benefited.

There is a rapid and noticeable move of all dental colleges to become associated with medical colleges and faculties of universities, so that they may benefit from the educational and financial opportunities offered by such a relation. The present scale of dental students' fees cannot maintain a high standard school.

This very situation was recognized by the authorities of the R.C.D.S. just twenty years ago, and made certain moves to have the Dental School become a faculty of the University of Toronto. Over 90 per cent of the graduates who voted on a return card were in favor of it. At that time the University preferred to postpone action, and at a later period entered into negotiations with the Board, which appointed a committee which had several conferences, but of late years there has been no action. Unless some action is taken the dental college will be left as the only school on this continent not benefiting in gifts towards universities and medical colleges, and will find itself with those who think dentistry is no part of the great public health or medical problem.

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## **The Dentists' Legal Protection Association of Ontario**

This is a new organization whose objects are to support, maintain and protect the honor, character and interests of its members; to encourage honorable practice of the dental profession, to give advice and assistance to, and defend and assist in the defence of members of the association in cases where proceedings are unjustly brought or threatened against them in connection with the ethical practice of their profession.

In pursuance of the said objects, this association has undertaken to assist in defending civil actions for damages for alleged malpractice in the practice of dentistry in all its branches, when such actions appear to the executive committee and to the general council of the association to be unjust, harassing or frivolous, or when it appears otherwise necessary to afford the member, whose professional conduct is impeached, an opportunity of defending himself before a court of law.



## Untruthful Statements in Advertisements

During the past few years it would seem as if advertisers of cures for pyorrhea were vying with each other as to which could make the most extravagant statements. The reading columns of daily papers often give help to the semi-quack dentist, physician or chemist, in their claims to cure "this most prevalent and death-dealing disease." A layman after reading in his trusted evening paper that Dr. So-and-So says pyorrhea is curable, naturally thinks that the cure is now ready to be placed in the hands of every dentist, physician or board of health for distribution or administration just as salvarsan antitoxin or insulin is. Nothing could be farther from the truth. As yet, there is no specific for "pyorrhea" so called, either dietetic, mechanical, surgical or medicinal. It may be the result of one factor or many. It is of complex origin usually and therefore cannot have one specific cure. What dentist would like to have his name classed with the wonders claimed in the following advertisement. A correspondent asks why such an advertisement is allowed to be printed in a woman's magazine. The editor or manager does not know that it is untrue, that's all. If he will send a copy of this to the editor it may awaken someone.

After years of untiring research work, the fight against Pyorrhea has been won. No longer is it necessary to fear this terrible plague. It has been completely conquered. The discovery and perfection of "PYRO-FORM" proves that PYORRHEA IS NOT SUCH A SERIOUS MENACE AFTER ALL.

### THOUSANDS HAVE BEEN PERMANENTLY RELIEVED

Authentic reports by eminent chemists on 9,378 cases prove, beyond question, that this disease is no longer incurable. Evidence shows that "PYRO-FORM" eliminated more than 5,000 of the cases within 20 days. In every instance where "PYRO-FORM" was used diligently and according to directions, the case was completely banished.

"PYRO-FORM" destroys the infamous Pyorrhea germ, cleans out and heals the pus-infected gums and restores both the teeth and gums to a normal, healthy condition. Physicians and Dentists highly endorse it as the **ONE AND ONLY**

### REMEDY WHICH WILL POSITIVELY ERADICATE PYORRHEA.

"PYRO-FORM" is a scientific preparation designed to do one thing—banish Pyorrhea. The complete 20-day treatment consists of two preparations—a Germicide and a Vitalizer—which is sold at \$3.

### A POSITIVE GUARANTEE

"PYRO-FORM" is sold UNDER A STRICT MONEY-BACK GUARANTEE OF SUCCESSFUL RESULTS. If you are not entirely satisfied after completing the 20-day treatment, your full purchase price will be refunded. You have nothing to lose.

Do not endanger your health. If you have Pyorrhea—soft, tender and bleeding gums—order a carton of "PYRO-FORM" TODAY. Mailed in plain wrapper to any address, postage paid, upon receipt of check or money-order for \$3. Remember, if "PYRO-FORM" does not completely banish your case of Pyorrhea, your money will be cheerfully refunded. Mail the coupon—NOW.

### PYRO-FORM COMPANY

Dept. "F" San Bernardino, Calif.  
SCIENCE, AT LAST, MASTERS DREADED DISEASE OF THE MOUTH. NO LONGER IS IT  
NECESSARY TO SUFFER WITH LOOSE TEETH OR SOFT BLEEDING GUMS.

*Pyro-Form Co., San Barnardino, Calif. Gentlemen:—Send me a carton of "PYRO-FORM" for the enclosed \$3. It is understood you are to return the full purchase price if I am not entirely satisfied with results after using this treatment.*

Name .....  
Address .....  
F City ..... State .....

## Nova Scotia Dental Association

The Nova Scotia Dental Association is doing a commendable thing by collecting all the data it can concerning dentists and the practice of dentistry in the province. The province of Ontario gathered some of such data many years ago, but for some reason it has not been put together. As a matter of fact the officers are not sure where it is at the present time. Below is a copy of the plan of getting and keeping the records of the profession.

*Dear Doctor:—*

We have among the records of the *Nova Scotia Dental Association* a book which is designed to contain the dental history of every dentist who has been, or is at the present time, a member of this Association. This book, if it is kept up to date would form an invaluable record. Will you then please fill out and return, at your earliest convenience, the attached form to the Secretary of the Association.

We are further anxious to obtain as accurate a record of dental activities in Nova Scotia as possible, and any information which you can furnish regarding the history of dentistry in your locality will be much appreciated.

Place where practising .....  
 Date of commencing practice there .....  
 Other places in which you have practised, with dates .....  
 College graduated from .....  
 Date .....  
 Degrees .....  
 Dental Societies you belong to .....  
 Offices held in above .....  
 Papers and Clinics given .....  
 Additional remarks .....  
 .....  
 .....  
 .....

## Oral Sepsis and Cancer

F. St. J. Steadman, L.R.C.P., M.R.C.S., L.D.S., has again called the attention of the medical and dental professions to the close relationship as to cause and effect existing between oral sepsis and cancer. He holds the view that cancer does not come on suddenly, but there is a long period of chronic irritation due to infection or trauma, which precedes any actual cancerous development. Of all the forms of chronic irritation from infection there are none which persist for so many years as oral sepsis, and of these there is no location which gives so great an opportunity for extension involvement. Almost every organ of the body is directly reached from the mouth. Dr. Steadman says that over 90% of cases of cancer of the intestinal tract have oral sepsis and that over 80 per cent. of all cancers in men are found in this region. About 25 per cent. of cancers in women are found in the sexual organs.



## Editorial Notes

During the period of the war the dental officers assured every inquirer that there would be complete data prepared for writing the history of dentistry during the great war. In fact dentists have been told that such a history was then in preparation. Up to this time there has not been anything published on the question, nor is there a word about it. It would be interesting to the profession and especially to those who took part in the corps to know that a history is in preparation.

In every case of apical infection or pus absorption which has come under the author's observation recently, (about fifty cases), the uric acid content of the saliva has been double or more than double what it seems to be in people with perfectly healthy mouths. (Smith's Chemistry for Dental Students).

There is more information on general medical and dental jurisprudence to be obtained from the reported cases settled in and out of court by the London and Counties Protective Association than is to be found in the regular works on jurisprudence. The report gives in detail just how cases are conducted.

A correspondent in the British Dental Journal says a D.D.S. University of Toronto can register and practise in England for £5 a year, while if an Englishman wishes to practise in Toronto he must pay a fee of £50 and pass the final examination. Of course this is a little inaccurate. The University of Toronto has nothing to do with the license to practise in Ontario. These are separate bodies. The fact is, graduates of the University of Toronto with some special qualifications may register in England.

The various methods of cutting off nerve centres in different localities of the oral cavity so as to render all operations connected with dental surgery painless, were the main themes of a treatise given by Dr. James G. O'Neill of Port Arthur, to the second dinner of the season of the Winnipeg Dental Association, in the Fort Garry hotel, which was attended by 40 members, presided over by Dr. A. E. Clint.

It is expected that Ontario legislature will continue its annual grant to the finances of the dental college.

The third volume of the Index of Periodical Dental Literature has just appeared. It covers the period from 1839-1875. An important part of this volume is a history of dental periodical literature in the English language. Dentistry will never be able to repay Drs. Black and Hoffman for their efforts in preparing and financing this undertaking.

Milford News, a publication by L. D. Caulk Company, has a timely article on the patent medicines recommended to dentists and the public.

It is determined by the Board of Health of New Zealand, that 25 per cent. of the dental caries in the schools is caused by the stores which sell the children candies.

Dr. D. Watson, Brantford, was struck by a motor car as he was alighting from a street car and almost instantly killed. Dr. Watson was one of the most highly esteemed members of the profession in Ontario.

It is said that the Carnegie Foundation will donate dollar for dollar with the legislature of Ontario to promote dental research.

Dr. Frederick Frank, Sudbury, formerly of Shelburne and Orangeville, Ontario, was found dead in his office one morning. He had gone out hunting the day before and it is said he had been suffering from a slight stroke, and that when he reached his office, it finally overtook him.

Judge Lane, Montreal, gave judgment against Dr. G. Demers for \$123, being payment for making an artificial denture by Mr. Letarte, a mechanical dentist. Dr. Demers in his defence said Letarte had lost his business because of drunkenness. For this statement Mr. Letarte sued for libel. This latter action was lost.

It has generally been thought that ether anaesthesia was more frequently followed by post-operative pneumonia than other anaesthetics. There is evidence coming forth that oral sepsis during anaesthesia is more frequently the cause of pneumonia than the anaesthetic itself.

Some medical authorities believe there is a close relationship between constipation and adenoids, inflamed tonsils and dental caries, and that constipation has its chief cause in such baneful expressions as "nourishing food," "digestive food" and "feeding up." Bulk of food is just as essential for health as its nourishing qualities.



British authorities do not take kindly to the American committee's definition of "occlusion. The contact of the teeth of both jaws when the jaws are closed or during those excursive movements of the mandible which are essential to the functions of mastication."

This means nothing more than contact, and is a poor substitute for "occlusion."

Dr. Charles S. McLean, R.C.D.S., 1892, died in Brockville, Ontario, December 24th, 1923. Dr. McLean was at one time on the staff of the Dental College, Toronto, and later practised in Cardinal, Ontario. His daughter, Miss Muriel McLean, Toronto, survives him.

Mr. A. J. Fugawara, Vancouver, was fined \$150 for practising dentistry without a license.

Dr. Weston A. Price, Cleveland, has just contributed two works on the relation of dental disease to general health. A careful review will appear later.

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## **Durham and Ontario Dental Association**

President, Dr. Bonnycastle, Bowmanville;  
Vice-President, Dr. Beaton, Whitby;  
Secretary-Treasurer, Dr. Langmaid, Oshawa;  
Executive Committee, Drs. Trewin and Devitt.

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## **Moose Jaw Dental Association**

President, H. E. Johnson.  
Vice-President, C. E. Chegwin;  
Secretary-Treasurer, C. H. Wellington;  
Program Committee, J. A. Silknitter, B. A. Dickson.  
Entertainment Committee, James Plunkett; J. E. Rundle; W. W. Irwin.

## Book Review

DENTAL SURGERY NOTES BY ERNEST B. DOWSETT, L.R.C.P., M.R.C.S., L.D.S., GUY'S HOSPITAL, LONDON; FIFTH EDITION; PUBLISHED BY THE DENTAL MANUFACTURING COMPANY, LIMITED, ALSTON HOUSE, NEWMAN ST., LONDON, W. THE NEW YORK ADDRESS IS 220 WEST 42ND ST., NEW YORK CITY.

This is a little pocket book of 160 pages, containing the essentials of dental surgery without any operative technique. It covers a wide range of subjects in outline form only. It is intended as a guide for review in preparation for dental examinations. There are thirty chapters and an index. The teachings are exceptionally sound. One often wonders how so many erratic and illogical ideas get into the minds of so many dentists when our text books are so sane. It must show that dentists don't read books but listen to barnstormers. As an emergency reference this little book should be especially valuable to the young practitioner.

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**DENTAL ASSISTANT**—Experienced, desires a position in a dental office. Graduate of Training School for Dental Nurses, Royal College of Dental Surgeons, Toronto, also Bodee School of Prosthetic Dentistry, New York City. Miss Ruby Dynes, 614 Spadina Ave., Toronto.

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**FOR SALE**—Complete Dental Equipment in old established office. Very cheap, including good will of office. Rent very reasonable. Apply to C. E. Klotz, 84 St. Paul Street, St. Catharines, Ont.

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**WANTED**—Position by graduate, '22, with object in view of taking over practice. R. Macdonald, Hespeler, Ont.

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**YOUNG DENTIST**, graduate, 1922, R.C.D.S.; thoroughly experienced, desires position with dentist in Ontario. Box 9, Dominion Dental Journal, 73 Richmond, West, Toronto.



# Dominion Dental Journal

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No. 3

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## Porcelain Jacket Crowns

*J. W. Stewart, D.D.S., Hamilton, Ont.*

*Read before the Academy of Dentistry, Toronto Dec., 1923.*

Mr. President and Gentlemen:

My mission here this evening is to conduct a sort of revival meeting, to see if I cannot win some of you back to the fold of porcelain work. It is not a new subject, but we have been led away from it when enamel fillings and gold inlays were introduced.

Fortunately a few stuck by porcelain, perfected their technique in handling it, and now I can safely say that where it is indicated, it is by far the finest material at our disposal at the present time, both for appearance and durability.

What I have to say is not necessarily my own idea, just simply the method that I use at the present time for this work. A technique that is comparatively simple yet accurate. I have arranged what I have to say in the form of a sort of clinic as I feel it is the best method of getting my ideas across. I am going to limit my remarks on porcelain to the making of Porcelain Jacket Crowns.

There is no part of Dentistry that is more needed and yet more sadly neglected than Porcelain Jacket Crowns. In this age where we try to avoid devitalizing pulps, and where our better class of patients dislike the appearance of gold, it is up to us to give those patients something that will restore lost tissue without marring the personal appearance. In my own opinion there is no other material that will do this as well as porcelain.

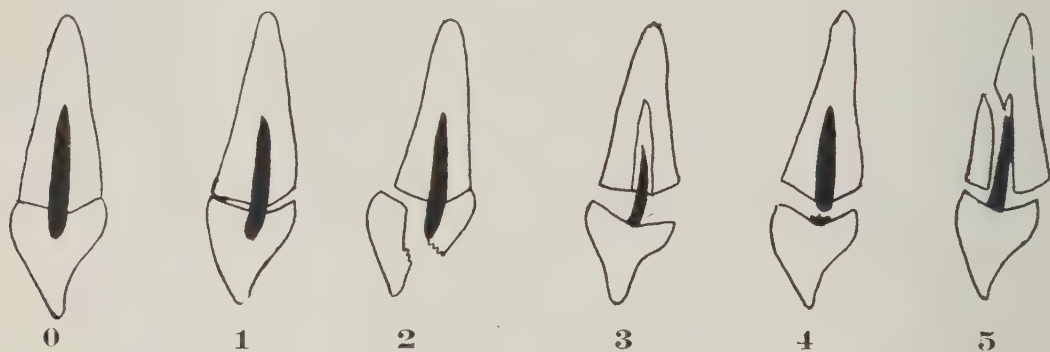
Let us just spend a minute to tell you where Porcelain Jacket Crowns are indicated.

- (1) Peg Laterals.
- (2) Mal-Formed Teeth.
- (3) Where there are mesial and distal cavities involving the corners or incisal edges.

(4) In any place where any other form of restoration would look unsightly.

(5) In cases where there is danger of splitting the root with the ordinary post crown.

The cases just enumerated have particular reference to vital teeth, but I would like to say a few words why Jacket Crowns are superior to the ready made crowns for discolored devitalized teeth. To do this I will have to resort to the use of drawings. Where there is an end to end bite there is no tendency to dislodge the crown but makes it seat more firmly on its base on the root. No. 0.



But if the force of mastication is not in a line with the long axis of the tooth then there is a tipping strain which makes it necessary to consider certain laws of stress and strain and strength of material as applied to this particular case. Let us first take the case of an ordinary post crown with root prepared in the ordinary way. Here we have two solid substances to deal with, namely, crown and root. It is now necessary to see how they act under stress. Where the stress is outward there is a tendency for the post to stretch and bend and the crown rotates outward over the labio-gingival angle of the root. As soon as these movements start to take place one of five things will happen: (1) the post will bend enough to allow for the bite but leaving a space at the linguo-gingival angle where the root will decay, or (2) the porcelain will break, or (3) the cement holding the post in the root will give way allowing the crown to come out entirely, or (4) the post will break off, or (5) last but not least the root might split.

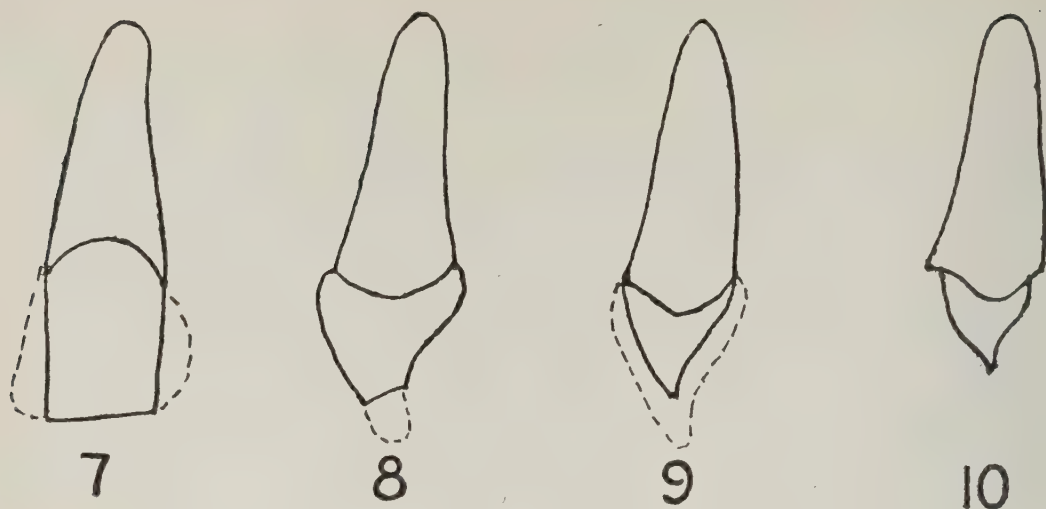
I suppose you wonder what this has to do with Jacket Crowns. Just simply this: In preparing for a Jacket Crown it is not necessary to cut the root off at the gum line and then



again we can use a much larger and stronger post in the pulp chamber than is possible with a ready made crown. Looking these facts in the face I think I am safe in saying that there are few of us who would advise a patient with a discolored anterior tooth to have that tooth cut off at the gum line and have a peg tooth inserted. Down in the bottom of your heart you know that you are not sure of matching the natural tooth with a ready made tooth either in color or shape or both. You also know that the patient would not only be taking a chance of loosing the crown but also the root. That condition does not exist in Jacket Crowns. You know that no matter what the peculiarities of the natural tooth you can build a Jacket Crown to match. The worst that can happen to a Jacket is that the porcelain might break. But you need have no worry about the root splitting or the crown lifting at the linguo-gingival angle. In handling discolored teeth I know of no other method equal to Jacket Crowns to restore the proper color. I do not know what is being taught today but I do know that in these cases it used to be considered good practice to enlarge the pulp chamber and try to bleach the tooth. We all know that in the majority of these cases they were failures as far as color goes. In our efforts to help the bleaching agent we would cut away the dentine freely in the pulp chamber, leaving but a shell of dentine to support the weak enamel. In Jacket Crowns we reverse that order of things leaving all the healthy dentine intact, fill the pulp chamber with a metal post and prepare for the crown by stripping off the enamel which is, as far as strength is concerned, the weakest part of the tooth. This we replace with porcelain which has about the same strength as the original enamel itself.

The first thing to do when you have decided to put a Jacket Crown on a vital anterior tooth is to take an impression in wax of the labial surfaces of the teeth. This will give you the shape and position of the tooth you are to work on and its relation to the others. Grind the mesial and distal sides of the tooth with a Jo-Dandy disc as I have done on this plaster model. Fig. 7.

The second step is to grind down the incisal edge so that it will give sufficient room for the porcelain and not endanger the pulp. Fig. 8.



Then proceed to strip off or grind off the enamel off of the labial and lingual surfaces of the tooth and with enamel cleavers make sure you have all the enamel off the tooth even under the free margin of the gum. If the patient is very young it is not necessary to strip off all of the enamel at the gingival. Fig. 9.

We now fit an aluminum or copper band one-half inch long to the tooth so that it just goes under the free margin of the gum, all the way around. Fill this tube with Kerr's Compound and lay it aside until the preparation of the tooth is finished, do this with a second tube. We now take a fissure bur and form a shoulder around the tooth following the gum line. The depth of the shoulder will vary with the size of the tooth. Finish the shoulder with safe sided end cutting burs.

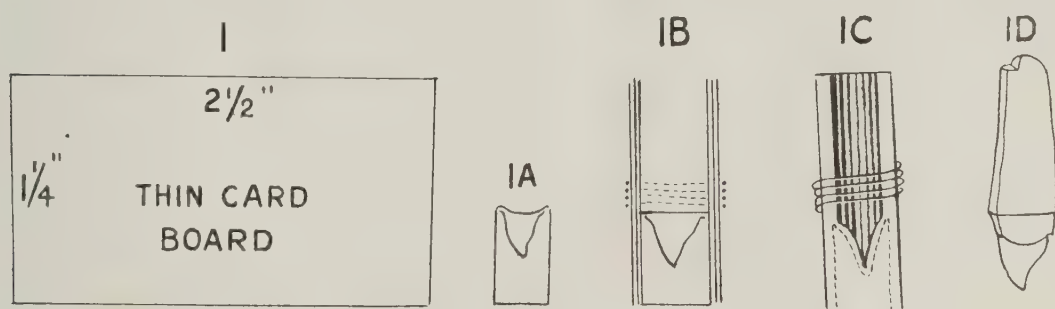
Fig. 10.

You are now ready to take the impression. Heat the compound in the tube and press to place on the tooth, being careful not to injure the gum tissue, but carrying the impression high enough on the tooth to get a perfect impression of the shoulder. Chill the compound and remove.

Take a second impression in the same manner. Select the better impression of the two to run up in Amalgam. The other one you place back on the tooth and take an impression for the case in plaster or Compound. The tube comes away with the impression. This gives you an impression with a perfect impression of the tooth you are to work on. Take a wax bite, then decide on what color you are going to use. Cover the prepared tooth with a varnish and Guttapercha or a celluloid tooth filled with oxy-sulphate cement, then dismiss the patient.



Take the impression of the individual tooth you took in the copper tube, trim off the excess compound. Wrap this in a piece of heavy paper about  $1\frac{1}{4}$  inch wide making a hollow tube you can pack your amalgam in. I find it is best practice to pack soft amalgam into the impression before wrapping in paper, as it gives you better access to the impression, then wrap with paper securing in place with a rubber band, then finish packing the tube full of amalgam. Allow to harden at least 6 or 7 hours before separating. After separating shape up the amalgam with a Hall wheel making it tapered with a notch on the Buccal or Labial side of the amalgam giving a model somewhat of the shape of these that I pass around.



Card board in which to wrap tube. 1a—Cross section of impression in tube. 1b—Cross section of impression in tube wrapped. 1c—Impression in paper tube packed with amalgam. 1d—Amalgam model shaped up.

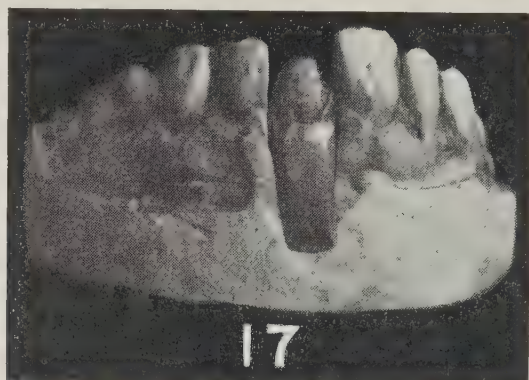
Insert this model in the impression and wax to place on the Labial or Buccal.



Oil the rest of the amalgam and run up the impression in plaster. Separate, remove the amalgam model from the plaster model, cut the plaster around the gingival below the contact so as to give room to carve your porcelain.

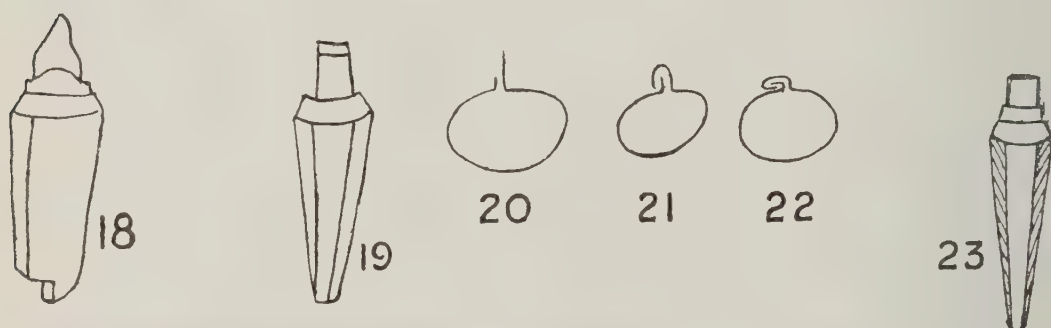
Shellac the teeth on each side of the amalgam model and when hard cover with Collodion. This is to keep the plaster

from absorbing any of the moisture from the porcelain when you are carving up the tooth. On the amalgam model make a paper pattern and from this cut a piece of platinum foil,



1/1000 thickness, the size of the pattern, and make a matrix over the amalgam, cutting and shaping as I do on this large model.

See drawings 18 to 23.



18 and 19 show platinum adapted to amalgam model and trimmed ready to make a tinner's joint. 20, 21 and 22 show how to make a tinner's joint. 23 shows finished matrix burnished to fit amalgam model perfectly. The joint at the gingival groove is reduced to one thickness of platinum by carefully grinding with small, fine stone.

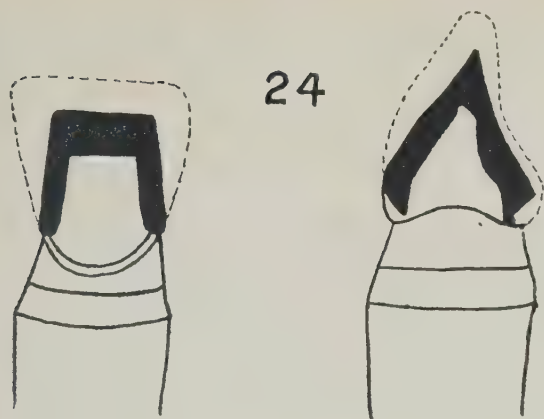
I would like to make a few suggestions regarding choosing color. Every tooth is made up of at least two colors. There is the orange or yellow that represents the Dentine. The color of the enamel represents the second color, and it is the blending of these two colors that determines the color of the tooth. I have a list here of colors in just porcelain that will make the shade of a just tooth when properly blended. As to variation in these colors I will try to explain if I have time after I have shown how to handle the porcelain.

Mix up some base or orange color and apply it to the Platinum Matrix making a uniform coating of porcelain over the Matrix. Cut away at the Gingival as I have done on this model.

Fig. 24.

Put in the furnace and bring it to a very dull biscuit





24—The dark area shows about the amount of porcelain you should use to build up for the first bake.

bake. Put back on the model and burnish the Gingival margin so that you know you have a perfect fit.

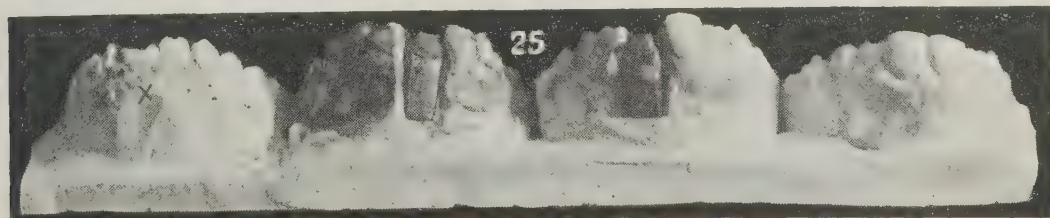
Now mix some orange porcelain on one part of the slab, and on another part of the slab mix the enamel color. Apply the base porcelain around the Gingival of the tooth, working it to place perfectly.

Now apply the enamel body to the tip of the tooth allowing the two colors to blend at the Gingival. Carefully build up the porcelain and carve to desired shape making the tooth slightly longer and larger than you wish. This is to partly accommodate for the shrinkage.

Carve in around the gingival, carefully remove amalgam model with porcelain tooth on it from the plaster model and add some porcelain at the contact points. When you have the tooth properly packed and carved, place in the furnace and bring to a dull biscuit bake.

Place back on the model and the tooth should be too large to go to place. Take fine stones and grind so that it is of the proper size to go to place perfectly, on the plaster model. You should also by grinding bring out all the fine carvings that you wish to reproduce.

Polish with garnet discs, wash with a brush and pumice and water finishing with clean water dry with a clean towel,



place back in furnace and finish baking it, bring it to as high a glaze as you wish.

Remove from furnace, strip out the Platinum Matrix and

it is now ready to be cemented on to the tooth. I have a few models here to show you, a few finished cases.

Fig. 25 shows the case of a boy twelve years of age with pitted centrals that had broken off. The second model is the



model I used for the first tooth. The third model shows one finished crown and second tooth prepared. Fourth model shows the finished case.

Fig. 26 shows model made from the wax impression before grinding a badly discolored tooth. This helps you to reproduce the original contour or anatomy of the tooth when carving up the crown.

## General Considerations in Partial Restorations

*Harold D. Morris, D.D.S., Toronto.*

Lord Beaverbrook has said in his book on "Success" that there are three attributes to be attained—judgment, honesty and health. Successfully solving the problem of partial restorations calls for the constant exercise of these attributes, which are so linked and intertwined that separate consideration is well nigh impossible.

There is little doubt but that poor judgment is and has been used in the past in partial restorations and that the dentist in many cases has not been honest with his patient in his work, nor has he considered sufficiently the health both general and oral that is necessary to have, to hold, and to maintain the restoration as desired. Restorations cannot be made like Ford cars, and the sooner the dental profession recognizes this and dwells on the subject until the last man realizes that great judgment is necessary and that snap judgments are out of the question the better for the health of our clientele and our own mental state. Careful examination of the human chest is only accomplished by careful routine ex-



amination by the physician. Is it fair then to expect the dentist to examine the mouth with a cursory glance?

We do not need to go far to see radiograms\* examined by window daylight, and with the merest glance and one picture professional advice offered that frequently makes a big difference to the patient for many years. Not only are we liable to be dishonest in our judgment and weaken health by these methods but we assume a responsibility and leave ourselves open to criticism which a few minutes rightly and faithfully spent will minimize and maybe eliminate. Let us make a plea for thorough routine examination. We are apt to advise extraction of teeth without explaining to the patient the consequences ensuing for the next ten years. Here opinions differ. In the first place no one knows the consequences exactly but we do in general and our patients ought to pay for time taken to give this advice, and while we cannot give them a dental education yet we can in many cases by the use of models and other means so impress them with the value of this service that they will take the necessary steps to protect their health. We take the moral obligation on our shoulders when advice is sought and not fully given. It behooves us to educate ourselves if we lack the necessary education.

The tissues of the mouth are subjected to periodic stress and severe use. Rough food is crushed under great pressure and the even distribution of pressure is the only thing that saves from pathological results.

If it takes twelve piles to hold up a railway trestle—who would risk their lives under it with only three supporting? It is easy to see that overload would occur and ruin. The same applies to the mouth. The anterior six teeth cannot withstand for long the full force that should be distributed and largely taken by the molars.\* The effect of peridental overload is evident in many clinical cases and is familiar to all observers and careful examiners.

Similarly mucosa overload may occur and this tissue become abnormal under excessive function. Judgment is necessary as tissue in one person may withstand severe strain while in another the tissue fibres may have so changed the character of the tissue as to give a different reaction.

The line of applied force is a factor in overload and may alter the conclusion considerably. In the preparation for inlay

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\*Dr. Webster.

abutments for fixed bridges we are careful to keep the walls of our preparations as nearly parallel as possible. This is quite necessary, but I believe it is easy to find cases where these are not parallel to the long axis of our abutment teeth and our pontic\* is not so situated that when stress is brought to bear in \*centric and \*eccentric occlusion the stress causes an overstress upon our thin pericementum with the result that an unhealthy and diseased condition ensues in the gingiva and later throughout the investing peridontium.\* I have searched the literature for information prohibiting bridging spaces using "leaning" teeth as abutments but no one has prohibited this practice in their writings evidently. I do not believe that teeth should be used when they are deflected from the normal angle to the occlusal plane. It seems reasonable to expect trouble to follow due to unnatural stress. The cutting off of blood supply due to abnormal pressure and stress in certain directions will surely result in infarcts\* of the gingivae. This may be temporarily compensated for by alveolar crest absorption but this only lowers the tone and support of the gingivae and leaves less pericementum and bone to receive the same stress with consequent overload, thus establishing a vicious cycle leading to more severe disease. It is our duty to prevent these occurring. Some may urge this is a select field in dentistry but it should form part of the basis of our judgment when our patient presents. Let us be better than the layman who sees in part only. The teeth are not the first in consideration though they crop up and stick in our eyes. The patient only knows he has two teeth out here or a tooth out there and he wants a bridge. Some dentists see no more! They place a bridge and in a year the abutments are lost. The patient may have rheumatoid arthritis and poor health ensue. The dentist is not sued because the case cannot be proven, but surely the moral obligation is clear without jumping to conclusions between cause and effect. Much better for us to use caution and with careful procedure and skilful work present those restorations that will be conducive to health and give lasting and uninjurious service.

The following outline is presented to give a definite idea of routine examination so that if used no points will be overlooked:

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\*pontic—a tooth substitute (Anthony) \*centric and \*eccentric—(Stillman and McCall) \*Peridontium (Box) Infarcts (a wedge-shaped area of necrosis)—McCallum General Pathology).



## I. General appearance

Age, sex, health, features, hollows, coloring.

## II. Teeth:

General visibility, at rest, condition, cleanliness, shape, strength, fillings, firmness, uprightness, wear, tartar.

## III. Gum:

Color, shape, hardness, tenderness, pockets.

## IV. Jaws:

Size, shape, sulci, skiagram, relative width—height of vault, flat or ridged, horizontal or nut, smooth or nodular, undercut, or conical, broad or narrow.

## V. Bite:

Height, protuberance, symmetry, movements, single bite, definite or free, uni or bi lateral, strong or weak.

## VI. Lips—Cheek—Tongue:

Length, thickness, attachments, movements.

## VII. Old Dentures:

Appearance, fit, cleanliness, stability, utility, weight.

\*Preparation of the mouth and difficulties.

1. Unhealthy or uncomfortable condition present or expected.

2. If change likely to occur when and for how long?

3. What is unfavorable to efficient support and retention and good design?

4. What conditions will mar good appearance of restoration?

Patients should be checked up on oral health and diet and especially carelessness in either. The human element is a factor to be considered.

The extraction of teeth in preparation for partial dentures should be considered, bearing in mind the service those teeth may render, danger of menace to health, and the patient's wishes. When all conditions are reported and corrected to be favorable, impressions may be taken as desired and casts\* carefully made.

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\*Stomatology—Pickerill.

\*Cast—The product of pouring material into a mold or the process (casting).

Considerable time and effort has been spent to give us a scientific method of design and a classification so that designs may be simplified as much as possible thereby cutting to a minimum the possibility of damage to oral structures. So much is in print to help in design that anything here would be by way of repetition, but it is very necessary to remember every factor considered in the examination so that our design will be entirely compatible with its surroundings and allow normal function.

There is at present an endeavour to give slight mobility to parts of an artificial denture by special attachments and connectors. If these prove satisfactory with the test of time they should do much good. It is doubtful, however, if they will accomplish what is expected of them in all cases.

The manufacture of the design is well understood and is purely mechanical in procedure. Care is necessary at each step to secure a perfect result that will cause no ill-effects later and will simulate the lost parts as nearly as possible. When ready to install, the manufacture of the piece should be checked up both as parts are finished, and when complete, and necessary alterations made. Here we should pay particular attention to undue stress on parts and tissue impingement. The occlusion both centric and eccentric should be very carefully corrected, ground and checked up by use of carbon paper and carborundum and glycerine in articulator if necessary. Every effort should be made within reason to make the appliance comfortable so that the patient will eventually be half unconscious of its presence.

No patient who desires to make the most of the restoration will object to periodic recall and examination. It is as much the duty of the dentist to insist on this as it is that of the physician's during a patient's convalescence, and this duty should not be shirked.

If the dentist is so unfortunate as to have a patient who wants undesirable and injurious work done his way, the choice is between not rendering the service and placing full responsibility upon the patient for the result. In the latter case the arrangement better be in writing in as much as these patients may be inconsistent in their wishes.

The dentist desiring to render good service, to make satisfactory partial restorations that will be permanent and uninjurious, cannot overlook his patient's general condition



regards health and diet, nor predispositions to local oral disease.

The human body is nourished by what we eat. The cells are only "strong" in proportion to the quality and quantity of the nourishment. If the cells are "sick" disease easily gains a foothold.

The dentist must be able to see ahead and know the ultimate results of his work in that mouth.

There is no high road and no short cut. Honest careful work, thorough study of each case, wide knowledge and sound judgment are necessary to the dentist who desires the esteem of his fellows, the maintenance of his own self-respect and the rendering of a service that brings happiness and health in the lives of men.

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## Rules Governing the Admission of Proprietary Articles to the Book of New and Nonofficial Remedies

### EXPLANATORY COMMENTS ON THE RULES

**INTRODUCTION.**—*History, Purpose, and Method.*—The Council on Pharmacy and Chemistry was established in February, 1905, by the American Medical Association, primarily for the purpose of gathering and disseminating such information as will protect the medical profession in the prescribing of proprietary medicinal articles. In pursuance of this object the Council examines the articles on the market as to their compliance with definite rules designed to prevent fraud, undesirable secrecy and the abuses which arise from advertising directly or indirectly to the laity. Such articles as appear to conform to the rules are accepted and their essential features are described in the annual publication of the Council, *New and Nonofficial Remedies*, if they come within the scope of this book.

*Submitted Evidence.*—These descriptions are based in part on investigations made by or under the direction of the Council, but in part also on evidence or information supplied by the manufacturer or his agents. Such interested statements are examined critically, and are admitted only if they appear to be in conformity with the evidence. It is, however, manifestly impossible for the Council to investigate the composition of every complex pharmaceutical mixture, or to check thoroughly every therapeutic claim; it can give only an unbiased judgment on the available evidence. Criticisms and corrections of the descriptions which may aid in the revision of the matter will be appreciated.

*Previous Noncompliance and Fraud.*—The Council judges an article entirely by the facts in evidence at the time of its admission. Previous noncompliance with the rules (short of *intentional* fraud) does not prevent the favorable consideration of an article which is in accord with existing rules.

*Reconsideration.*—Infringements of the rules after acceptance of an article for *New and Nonofficial Remedies*, or the discovery that the Council's information was incorrect, will cause the acceptance to be reconsidered. An article is accepted for *New and Nonofficial Remedies*, and will continue to be included in the book, with the understanding that serious violations of the rules, after acceptance, will be fol-



lowed by the omission of the article and publication of the reasons for such omission.

*Acceptance Not an Indorsement.*—The Council desires physicians to understand that the admission of an article does not imply a recommendation. Acceptance simply means that no conflict with the rules has been found by the Council.

**DURATION OF ACCEPTANCE.**—Unless an agreement to the contrary is made at the time of acceptance, articles admitted to New and Nonofficial Remedies will be retained for a period of three years, provided that during that period they comply with the rules and regulations which were in force at the time of their acceptance. At the end of this period all articles will be carefully reexamined for compliance with existing rules. Particular weight will be given to the question whether the manufacturer can submit more recent evidence that the claims as to therapeutic value are warranted (Rule 6). The reacceptance of articles after such examination shall be for three years unless a shorter period is specified.

Any amendments to the rules, by specific requirements or by interpretation, which may be made after the acceptance of an article, shall not apply to such article until the period of acceptance has elapsed. At the end of this period the article, if it is not eligible under the amended rules, will be omitted.

**THE SCOPE OF NEW AND NONOFFICIAL REMEDIES AND APPENDIX.**—To aid physicians and manufacturers in deciding what articles come within the scope of this book, or, in other words, to enable physicians to recognize whether an article which is not described in New and Nonofficial Remedies has been omitted because it does not need admission or because it has been rejected, the Council furnishes the following more detailed definitions:

**OFFICIAL ARTICLES.**—Articles official in the U. S. P. or N.F., do not require consideration by the Council, if they are marketed under the official name and if no unestablished therapeutic claims are made for them.

These do not require consideration by the Council, since standards for them are provided in these books, and enforced under the provisions of the Federal Food and Drugs Act, excepting they may be mentioned for information.

Consideration by the Council becomes necessary if a U.S.P. or N.F. product is offered for sale under a name other than that, or the synonyms, under which the product is described in one of these books of standards, or if the proprietors or their agents advance claims that the product

possesses therapeutic properties other than those commonly accredited to it.

MODIFICATIONS OF U.S.P. AND N.F. PRODUCTS.—A pharmacopeial or National Formulary product which is marketed under the official title or synonym but with well-founded claims that its purity, permanence, palatability or other physical properties excel the official standard, may, if no extraordinary therapeutic properties are asserted, be considered as an official article and held not to be within the scope of New and Nonofficial Remedies.

When such products are marketed under the claim that they possess therapeutic properties other than those commonly accredited to the U.S.P. or N.F. products of which they are modifications, they shall be subject to the consideration of the Council.

SPECIFICALLY EXEMPTED PREPARATIONS.—Foods, in general, unless marketed with the claim that they possess therapeutic properties shall not, at the present time, be considered by the Council. Mechanical appliances, at the present time, shall not be considered by the Council. Mineral waters (natural), at the present time, shall not be considered by the Council.

With these exceptions, products which in the judgment of the Council are manufactured and marketed in conformity to the principles underlying the rules of the Council may be accepted for N.N.R.

Products which are manufactured and marketed in a manner which does not conform to the principles underlying the rules of the Council shall not be accepted for N.N.R.

The burden of proof in establishing claims for therapeutic properties of products considered by the Council shall lie with the proprietor or, when a foreign-made product, with the agent who markets the product in the United States.

*Nomenclature.*—To avoid confusion with nonofficial substances marketed under similar names the Council recommends that official substances be prescribed by their official titles, followed by the abbreviation, "U. S. P." or "N. F.," thus: Tincture Nucis Vomicae U. S. P., Elixir Gentianae, N. F.

SUBSTANCES DESCRIBED IN NEW AND NONOFFICIAL REMEDIES.—In the body of the book will be described simple proprietary substances and their preparations; proprietary mixtures if they have originality or other important qualities



*Suffix N. N. R.*—The Council recommends that when these latter are prescribed, they be indicated by the abbreviation, “N. N. R.” thus insuring to the prescriber the quality of these articles laid down in the book.

PROPRIETARY MIXTURES.—*Definition.*—A mixture will be considered as proprietary, and therefore requiring consideration by the Council for admission to the book or appendix, if it contains any proprietary article; if it is marketed under a name which is in any way protected; or if its manufacturer claims for it any unusual therapeutic qualities.

*Where Listed.*—Proprietary mixtures which are marketed in conformity with the rules are listed in the appendix of the book under the names of the respective manufacturers. Such proprietary mixtures are not admitted to the body of the book, save in the exceptional cases cited in the preceding paragraph.

NONPROPRIETARY MIXTURES OF OFFICIAL SUBSTANCES.—Since the ingredients of such mixtures do not require consideration by the Council, and since the mixtures are not open to the proprietary abuses which called for the work of the Council, it is not necessary that they should be investigated by the Council. The physician must judge whether such mixtures should be directed to be prepared by the pharmacist, or whether he is justified in ordering a ready-made preparation. If he decides to use a ready-made non-proprietary preparation he must judge for himself if it is marketed in accordance with the rules.

*Trade Names.*—It should, however, be remembered that the application of a trade name to any substance makes it proprietary.

*Rule 1.*—COMPOSITION.—*Secrecy Objectionable.*—It is not only the right but also the duty of the physician to know the essential composition of what he prescribes; the Council cannot compromise on this proposition.

*Vehicles and Preservatives.*—In the case of mixtures not only the potent ingredient, but also the general character of the vehicle, the presence of alcohol, and the identity of preservatives, or of any other substance, whether added or present as an impurity, must be stated, if these can under any circumstances affect the therapeutic action of the article. This, as a rule, does not mean the publication of trade secrets, such as flavors or the details of the working formula.

*Trade Secrets.*—Furthermore, trade secrets will not be received as confidential by the Council, since it accepts information only with the distinct understanding that this may be freely published, at its discretion.

*Inspection of Factories.*—The Council does not accept invitations to inspect factories; its concern is with the finished products.

On the other hand, the Council requires that the information be complete and accurate as to medicinal ingredients.

*Unofficial Constituents.*—Unofficial constituents of proprietary mixtures must be presented by the manufacturer in the regular way and must be acted on by the Council before the preparations containing them can be accepted.

*Fraud.*—When it appears that a manufacturer has made a *deliberately* false statement concerning a product he is asked to furnish an explanation; and if this is not satisfactory the product will not be accepted, even if the false statement is subsequently corrected or omitted.

*Testimonials.*—The foregoing paragraph applies not only to statements made to the Council, but also to statements furnished to physicians by the manufacturer or his agents, even when these statements are in the guise of testimonials.

*Rule 2.—IDENTIFICATION.*—In order to avoid errors in the case of chemical compounds, and to guard against adulterations, lack of potency or strength and the mistaking of one chemical for another, it is necessary to have at hand suitable tests.

*Tests, etc.*—If these facts have appeared in the literature, or in standard textbooks, reference to them will be sufficient; but with new chemicals, especially synthetics, the manufacturer or his representatives will be required to supply such tests for publication, in order that an intelligent opinion of these products may be assured.

*Physiologic Standardization.*—In cases in which chemical methods of identification are unknown or unreliable, physiologic standardization should be employed. The Council considers the phrase “Physiologically standardized” or “assayed” as misleading unless the standard and method are published in sufficient detail to permit of their control by independent investigators.

It is evident that when no standard is published, it is impossible to know whether the quality is high or low, and the conscientious manufacturer who sets for himself a high stand-



ard is placed on a level with the dishonest or careless one who adopts a low standard. Again, if the process of standardization is not published, it is impossible to learn without actual trial the relative value of one preparation as compared with that of another manufacturer as to the quality of his product.

*Standardization of Disinfectants and Germicides.*—No disinfectant or germicide of the phenol type will be accepted for N.N.R. whose phenol coefficient, determined according to the method of the Hygienic Laboratory, U.S.P.H.S., is not stated on the label of the preparation.

*Rule 3.—DIRECT ADVERTISING.—Lay Advertising.* — The impossibility of controlling the irresponsible claims which are usually made in advertisements to the public, the well-known dangers of suggesting by descriptions of symptoms to the minds of the people that they are suffering from the many diseases described, the dangers of the unconscious and innocent formation of a drug habit, and the evils of harmful self-medication, including the dangers of the spread of many infections and contagious diseases when hidden from the physician, and similar well-known considerations, are the reasons for discouraging, in the interest, and for the safety, of the public, this reprehensible form of exploitation. Advertising in medical journals, etc., distributed solely to physicians, does not come within the scope of this rule.

*Exceptions.*—In the case of subjects on which the public should be instructed, as the use of disinfectants, germicides, antiseptics and foods, advertisements to the public, if not in objectionable forms, are considered admissible.

In no case shall such advertisements include recommendations for use as curative agents, nor shall the names of any diseases be mentioned in exploitation. If the preparation is sufficiently toxic to require caution in its use to prevent poisoning, this fact shall be stated on the label. On account of the deplorable results which would follow any abuse of this privilege, the conscientious co-operation of manufacturers and their agents in adhering strictly to the limitations laid down is asked; and for the same reason the acceptance of an article which is so advertised as to infringe on these limitations in any essential way (as by naming diseases or by making false and exaggerated claims) shall be summarily rescinded, and the reasons for such action may be published without notice to manufacturer or agent. A disinfectant, germicide or antiseptic will be accepted for description in

New and Nonofficial Remedies, and an article of this class which has already been accepted will continue to be included with New and Nonofficial Remedies only on the explicit understanding by the manufacturer and agent that such infringements of the rule will be followed by deletion of the article and by publication of the facts as described.

*Foods.*—We may divide the foods into three groups. The first group contains the ordinary foods, including the well-known breakfast foods. These do not come under the supervision of the Council in any way. The second group includes a large and important class of manufactured products, such as invalid and infant foods, which in a sense stand between the first and third groups. The public has the same interest in these foods that the physician has, and usually is supplied with full information concerning them. While the primary recommendation of these articles should naturally come from the physician, it cannot be expected that their continued use should depend on repeated prescriptions. Information concerning this group of foods would come naturally and properly from a physician, and the collection and dissemination of this information may very properly be included in the work of this Council. As the products in this class are used extensively, it is not proper to limit their advertising to medical journals, but the advertising should be permitted in the lay press so long as it is conducted in a manner compatible with the rules of the Council. The third group includes medicinal foods proper, such as predigested foods. These have a relatively low food value and are characterized by a high alcohol or preservative content. They frequently contain strictly medicinal substances, or food substances for which distinct therapeutic properties are claimed. These products should be used only on the advice of the physician, and the advertisement should be restricted as in the case of ordinary medicines.

*(To be Concluded)*

## Canadian Dental Association

### Vancouver, B.C., August 4th-8th, 1924

The Transportation Committee has secured the following rates per day of the various Vancouver and New Westminster Hotels, which will be in effect at the time of the Canadian Dental Association meeting, August 4th-8th.

A: Room, without bath, with running water, containing one single bed, to be occupied by one person.

B: Room, without bath, with running water, containing one double bed to be occupied by one person.

C: Same as "B", but occupied by two persons.

D: Same as "B", but containing two single beds and occupied by two persons.

E: Same as "B", but containing two single beds and occupied by one person.

F: Room, with bath, containing one double bed to be occupied by one person.

G: Same as "F", but to be occupied by two persons.

H: Room, with bath, containing two single beds, to be occupied by two persons.

I: Suite of two rooms, with one bath, to be occupied by two persons.

J: Same as "I", but to be occupied by three persons.

K: Same as "I", but to be occupied by four persons.

L: Additional charge per day for each additional occupant above the ordinary capacity of rooms.

| Hotels                     | A.     | B.     | C.     | D.     | E.     | F.     | G.     | H.     | I.      | J.      | K.      | L.                |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|-------------------|
| Vancouver Hotel            | \$4.00 | \$4.00 | \$6.00 | \$6.00 | \$5.00 | \$5.00 | \$8.00 | \$8.00 | \$10.00 | \$13.00 | \$16.00 | \$2.50B<br>\$3.00 |
| Hotel Grosvenor.....       | 1.50   | 2.00   | 3.00   | 3.50   | 3.00   | 3.50   | 4.50   | 5.00   | 6.00    | 8.50    | 9.50    |                   |
| Elysium Hotel Limited..... | 1.50   | 2.00   | 2.55   | 3.00   | 2.50   | 3.00   | 4.50   | 5.00   | 6.00    | 7.50    | 8.50    |                   |
| Castle Hotel....           | 1.50   | 2.00   | 2.50   | 3.00   | 2.00   | 2.50   | 3.00   | 3.50   | 4.50    | 5.00    | 6.50    |                   |
| Hotel Angelus..            | 1.50   | 2.00   | 2.50   | 3.00   | 2.50   | 2.50   | 3.50   | 3.50   | 4.50    | 5.50    | 6.50    |                   |
| St. Regis Hotel..          | 1.50   | 1.50   | 2.50   | 3.00   | 2.50   | 2.50   | 3.50   | 5.00   | 5.00    | 6.00    | 7.00    | 1.00              |
| Dunsmuir Hotel.....        | 1.50   | 2.00   | 2.50   | 3.50   | 2.50   | 2.50   | 3.50   | 5.50   | 5.50    | 5.50    | 6.00    | 1.00              |
| Hotel Alcazar ..           | 1.50   | 1.50   | 2.50   | 3.00   | 2.50   | 2.50   | 3.50   |        | 5.00    | 5.50    | 6.00    | 1.00              |
| Barrom Hotel.....          | 1.50   | 2.00   | 3.00   | 3.50   | 3.00   | 4.00   | 4.50   | 5.00   | 6.00    | 8.50    | 9.50    |                   |

B.—Without bath. All hotels listed are on European plan, and have cafe in connection.



HOTEL RESERVATIONS

In making your reservations for the coming meeting consult the hotel rate-sheet on the next page and fill out the blank contract below.

Mail the same direct to the hotel you wish to patronize and a copy of the contract accepted by the Hotel will be sent you upon receipt of the attached: also baggage tags for your use.

HOTEL RESERVATION CONTRACT

Canadian Dental Association — Vancouver B. C., Aug. 4-8-1924.

.....Hotel.  
Vancouver, B.C.

Name .....

Street .....

City .....

Province .....

Date .....

Please reserve me a room as per request on following page. The cost of which will be ..... per day.  
List names of all who will occupy rooms with you.

Name .....

Address .....

Name ... ..

Address .....

Name .....

Address .....

A. T. Oberg,  
833 Granville St.  
Vancouver, B.C.

London Dental Society

The London Dental Society is in a very gratifying condition, with forty members this year, and all of the meetings well attended. The first meeting of the season was on October 31st, when a joint session was held with the Western Ontario Academy of Medicine and the Elgin (St. Thomas)

Dental Society. Dr. Weston A. Price, of Cleveland, was the principal speaker. He gave a comprehensive and very able address on the most recent investigations regarding local infection of dental origin. The address was acknowledged by the president of the Academy of Medicine, to be the most masterly to which that organization had had the privilege of listening. Dr. Price was followed by a paper by Dr. Wright, of Toronto, and by a short address by Dr. Banting. This meeting was held in the Assembly Room of the new Medical School.

On November 30th and December 1st, Dr. I. H. Ante gave a splendid clinic on gold inlay and inlay bridge-work. This clinic was held in a class-room of the Technical School.

The January meeting consisted of a dinner, followed by an excellent paper and clinic by Dr. Harold S. Slocum, of Detroit, on "Root Canal Problems and Treatment tending toward Conservation."

Further clinics will be conducted each month until spring.

In addition to these sessions, the Association has a class of seventeen taking Anatomy one evening a week, at the Western University Medical School, under the direction of one of the college staff.

The Executive Committee of the London Dental Society for this year consists of: President, John F. Blair; Vice-President, M. A. Ross Thomas; Secretary-Treasurer, W. Y. Hayden; Executive, S. M. Kennedy.

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## A New Dental Directory

It is a pleasure to announce that the well-known firm of directory publishers, R. L. Polk & Co., have in course of preparation a new edition of their Dental Register and Directory of the United States and Canada, which will be issued about the end of the present year. This will be the thirteenth edition, the last having appeared in 1917. Management and compilation of the work will be under supervision of the Chicago office of the publishers, located in the Rand, McNally Building, 538 C. Clark St. Dr. Louis Ottofy, widely and favorably known among the members of the dental profession as a dental lexicographer, is taking care of the editorial part of the work.

## Correspondence

January 2nd., 1924.

The Dominion Dental Journal, Toronto, Ont.

Dear Sirs:

I am interested in the article on pages 433 and 434 of The Dominion Dental Journal for December 1923.

Particularly so in respect to the sentence, "ASK US HOW TO COLLECT A DENTIST'S BILL." Anything you can forward in connection with this delicate, but highly important, branch of our work will be appreciated.

Yours truly,

R. G. M.

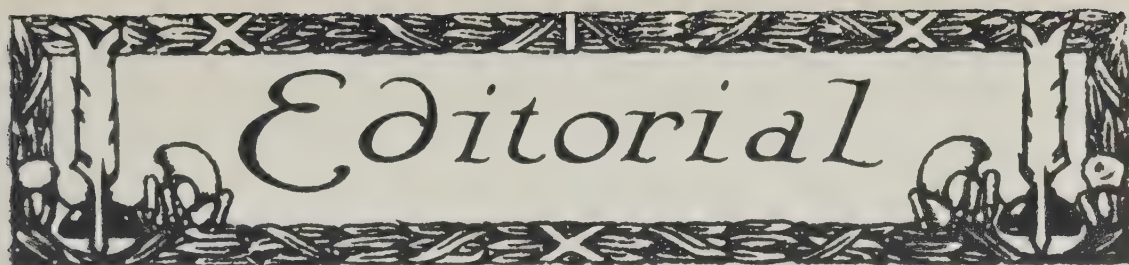
ED.—There are many factors which enter into tardiness in payment of bills. This is especially so in connection with professional services. There is an idea that, since the professional man has no disbursements and delivers nothing to his client for which he has to pay at the time, of course he can wait for his money. The tailor, butcher and grocer all come before the dentist. Another factor is that the professional man is not a business man and, therefore, is not likely to act harshly if his accounts are not paid.

The chief cause for delay in payment is some irregularity in the account. It was more than was expected. The correct address was omitted. The name was spelled wrong. It came the tenth of the month when it had been expected on the first, etc. Be absolutely businesslike in every particular of accounts and thus avoid many delays.

Frank P. Davis, M.D., Enid, Oklahoma, U.S.A., published a little book entitled "How to Collect a Doctor's Bill" a few years ago, which is very interesting and contains the amount of property which may be retained in spite of an execution of the court. In the province of Manitoba, furniture, bedding and clothing to the amount of five hundred dollars may not be touched.

The Ritter Company has recently published a book on practice building in which is found a section on collecting Dentists' Bills. Definiteness and persistence are the factors of most value in collecting accounts. Follow-up letters are advised, but a personal interview or even a call on the phone often bring better results.





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TORONTO, MARCH, 1924

No. 3

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## **Cleaning Teeth**

It is difficult to write what ought to be written on this subject without seeming to encourage the neglect of a duty of the dentist or on the other hand appearing foppish. The fact that dentists clean teeth so as to improve the personal appearance of their patrons is a greater barrier to the social recognition of the profession than the lack of education, culture or wealth. Not long since a dentist was heard to say that he cleaned a certain man's teeth and that the man rather complained that his former dentist had not done so. From the description of what was done it would seem as if it was a personal service which was rendered similar to that of a hair-dresser or a shoeshiner. The dentist, and there are many of them, who is willing to run over the exposed surfaces of the teeth with a rubber cup or brush wheel charged with a grit wet with dilute acid so as to clean them is truly a body servant. Such practices cannot by any stretch of the theories of dental disease be classified as prophylactic treatments. The very armamentarium supplied by dental depots for this operation indicate that neither dental caries nor periclasia are expected to be prevented or cured by their use. They will neither reach the surfaces where teeth begin to decay nor

the areas where periodontal irritation is found. They are truly toilet preparations and appliances and operated by valets or servants. The service is paid for on the basis of its value—the equivalent of a tip.

We have always held that dentistry like other callings in life got all the recognition its value merited. We never complain when dentistry is set in its place. There is no use. Only boors and social climbers with thick skins will bear the rebuffs of their betters. The world's social fabric is a development of centuries and seems to have some reason for its existence otherwise it would have been lost before now.

To those who may not know there are scores of social functions, social clubs and some public organizations to which dentists may not belong. Applicants who are dentists are not personally objectionable to the membership but the calling of dentistry is objectionable. This is borne out by dentists being acceptable as soon as they retire from practice. A few years ago a dentist whose application for membership in a noted metropolitan club was rejected, demanded to know why such was done. The club's reply was that he was a dentist and that he cleaned teeth. There was nothing more to be said.

Spinning brush wheels charged with pumice wet with sulphuric acid over the exposed surfaces of the teeth for purpose of improving the patron's appearance is cleaning teeth. The only surfaces reached by such practices are those which ought to be cleaned by the patient with a tooth brush. Dental prophylaxis is a different thing altogether from cleaning teeth.

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## Notes

Dr. Doerhing, Waterloo, Ontario, has taken over the practice of Dr. J. Schmidt.

Dr. M. M. House of Kansas City, delivered a lecture and demonstration to Durham, Ontario, Dental Association, Jan. 10, 1924.

Dr. Richard Revell, Woodstock, Ontario, is in active practice at the age of 90 and has been continuously practicing for 65 years.

The first meeting of the American Association of Dental Colleges will be held in the Congress Hotel, Chicago, March 5 to 7th, 1924.

Dr. L. E. Gieser, Moose Jaw, has begun practice at Lucky Lake.

Dr. Joseph H. Hickey suicided in Buffalo, December 17, no apparent reason.

Dr. C. Harold Cowan, who died at Kamloops, was buried in Regina, Sask., where his parents live.

Dr. G. F. Goy, a dentist of Detroit, has been missing for some weeks. He formerly lived in Toronto.

A synopsis of the dental license requirements throughout the world is published in the Dental Digest.

Dr. Garean addressed the Regina dental society on "Abnormal teeth in children as an aid in diagnosis."

Dr. Thomas Joseph Jones died in Vancouver in his 79th year. He began practice in Ontario over sixty years ago.

Dr. Kent Thoma, Boston, delivered several lectures in Canada on X rays and surgical affections in January, 1924.

Queen St. Methodist Church, Toronto, is contemplating establishing a dental clinic in connection with "Neighborhood Church Service."

Dr. Henry G. Robb, exodontist announces the removal of his offices to suite 470 Physicians and Surgeons Bldg., 86 Bloor St. West, Toronto, Phone Randolph 9034.

Beginning with Feb. 11th the Royal College of Dental Surgeons has begun giving short courses of intensive study of special subjects adapted to the needs of practitioners.

Dr. Henry Dunham Burritt, Vancouver, B.C., one of the first graduates of the Royal College of Dental Surgeons, Ontario, died Jan. 9th, 1924, at the age of eighty five. He was the first graduate to practice in Vancouver.

How many dentists look at their patients or examine their mouths and see more than teeth?

We are sometimes humiliated when a physician orders that certain teeth be extracted. This embarrassing situation will cease when dentists prove themselves capable of understanding human ills in a broader sense.



## Obituary

### T. J. Jones, D.D.S., Victoria

Dr. Thomas Joseph Jones, a pioneer Victorian and dentist, died at his residence, 1171 Rockland Avenue, at the age of seventy-nine years. He was a practitioner of dental surgery for more than sixty years, and one of the oldest in his profession in the Dominion.

The late Dr. Jones was born in Toronto but spent his early years of practice in St. Catharines, Ont., where he served eight years on the city council. Forty years ago he came to Victoria and had lived here ever since, engaged at his work almost until the day of his death.

In association with the late Major Dupont, D. W. Higgins and Hon. Theodore Davie, Dr. Jones was instrumental in bringing the first street railway to Victoria, being the first vice-president of that institution. He was a life-long Liberal, always strong in the affairs of that party and so staunch in his support of its principles that he was often called the "Father of Liberalism."

He is survived by his widow and one son, Dr. T. H. Jones, and his sister-in-law, Miss J. George.

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**FOR SALE**—Two chair dental office and good practice in the province of Saskatchewan, this is a good opening for some wide awake man; inquire of Dental Company of Canada, Ltd., Toronto.

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**FOR SALE**—Complete Dental Equipment in old established office. Very cheap, including good will of office. Rent very reasonable. Apply to C. E. Klotz, 84 St. Paul Street, St. Catharines, Ont.

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**FOR SALE**—Established Toronto dental practice on busy corner in good locality; new equipment; moderate lease and reason for selling. Apply Box 10, Dominion Dental Journal, 73 Richmond St. W., Toronto.

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**CAPABLE ENERGETIC DENTIST**—With an extensive experience and good class practice desires post as manager or operator. Willing to go anywhere. Age 36. Highest references. J. Limbrick, Central Chambers, 223 Wolverhampton Street, Dudley, Eng.

# Dominion Dental Journal

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Vol. XXXVI.

TORONTO, APRIL, 1924

No. 4

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## Roentgen Diagnosis and Technique of Minor Oral Surgical Operations

*Karl H. Thoma, D. M. D., Ass. Professor of Oral Pathology,  
Harvard University.*

\*The Roentgen Method of examining the oral tissues and the accessory nasal sinuses has been proven to be of such great value that today no proficient diagnostician would depart from its use in routine examination. The patient is usually not aware of the disease and the physician or dentist can only suspect diseases of the maxillae when he finds teeth with large fillings, gold or porcelain crowns, or discoloration.

### COMPLETE EXAMINATION OF GREATEST IMPORTANCE

When searching for infectious lesions to find the cause of some general systemic condition, it is of greatest importance to insist on a complete examination of all the teeth, and if any connected with maxillary sinuses are infected, the nose, with its accessory cavities should also be roentgenographed. To depart from a thorough routine examination often leads to regrettable oversights.

It is my firm belief that every new patient should have a routine Roentgen examination before any type of dental treatment is begun. The person with absolutely sound teeth may, perhaps, be excepted. It is also in the interest of the patients to return at certain intervals for a new Roentgen examination. It is surprising how dental caries starts in obscure places. The possibility of discovering a diseased condition before irreparable harm has been done, which sometimes even leads to the loss of the tooth, fully justifies this procedure. Many mistakes in treatment could be avoided by means of a Roentgen diagnosis. I can recall many cases of cysts, which were treated for months by applying anti-septic dressings to the root canals or by pulp removal from perfectly normal teeth. In other cases the patients were

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\*Delivered before the Academy of Dentistry Jan., 1924.

put to great expense for beautifully constructed bridge work, which only a few weeks later was found to be attached to badly infected pulpless teeth. Equally superficial is the treatment of the maxillary sinuses without investigating the dental condition. If an infected tooth has caused the sinus infection, it should be found and removed, but even in cases of nasal origin, a tooth may become a contributory factor in preventing complete recovery and may give rise to a recurrence.

The value of Roentgen diagnosis depends upon correct interpretation of the picture, and such interpretation can only be made from a good roentgenogram. When reading a picture, however, one should not forget the history of the case and the clinical findings. The roentgenogram does not picture disease. It only records changes in the radiability of the tissues. These may have been brought about by pathological processes or by surgical and medicinal treatment.

A Roentgen diagnosis is made by drawing deductions from the records made by the roentgen examination and the roentgenologist must become proficient in associating roentgen signs with corresponding diseased conditions. In a roentgenogram of a tooth, for example, the picture of the pulp is the same, whether diseased or normal; but if a dark area, indicating decay, is shown in the crown of the tooth, one may suspect pulp disease. If there are symptoms, or clinical evidence, the diagnosis is fairly certain. If, the picture, in addition to the above shows changes in the bone around the apex of the tooth the roentgenologist can, and without clinical indications, draw conclusions which lead to the diagnosis of pulp disease.

#### PERIAPICAL INFECTION

The scope of this paper will not allow me to discuss the pathology of periapical infections nor their relation to general health. I also shall omit the acute type of this disease but before starting with a description of roentgen findings in chronic periapical infection let me say a few words to further substantiate the fact that the radiolucent bone area around the root apex is not "a circumscribed area a minor and harmless thing" as some writers still believe, but a dangerous source of infection. With experimenting with exposure time, milliamperage and angle of the rays I took sometimes a large number of pictures of one tooth and found



that in several instances such teeth with radiolucent areas in the roentgen films developed very acute symptoms from nothing but repeated roentgen diagnosis.

In chronic periapical infections the following conditions should be determined by roentgen diagnosis:

1. The shape of the root, should be known in case of root canal treatment as well as in case of extraction.
2. The condition of the root canal either well filled, partly filled, apex accessible or apex closed.
3. Condition of the tissues at the neck of the tooth.
4. Condition of the periapical tissues.
5. Condition of the tooth apex.

#### KEEP THE ANATOMY IN MIND WHEN DIAGNOSING PERIAPICAL INFECTION

The bone destruction at the apex of the tooth shows, as you all know, as a dark area in the roentgen negative, which is a picture of the radiolucent bone cavity. We may generally take the size of an abscessed area as an indication of the seriousness of the involvement of the surrounding tissues. There is an exception to be made, however, in the bicuspid and molar regions of the upper jaw, especially if these teeth protude into the maxillary sinus. It should be borne in mind that when there is only a very thin film of bone over the roots of such teeth there is no chance for extensive bone destruction, and cases which show the smallest shadow are more liable to be the cause of sinus disease than larger areas separated from the antra.

Variations in the intensity of the picture of an abscess cavity have, to my mind, to do with its anatomical location. The defect in the bone consists, as is evidenced by examination of skulls, of a cavity due to bone destruction, with osteoporosis of the surrounding bone. This decreases the resistance to the roentgen ray. The degree to which this is registered depends upon the location of the abscess cavity. If the outer or inner cortical plate of bone has become perforated we get a deeper shadow than from a cavity in the cancellous bone between the two thick, unaffected cortical plates of the mandible. Again, if the apex of the root is close to the surface, as is often the case with upper incisors, we may find that there is only a shallow depression in the surface of the bone. This would give a very indistinct picture and the structure of the underlying, cancellous part of

the bone could probably be distinctly seen in the area on the film.

The most important information which the Roentgen picture gives in cases of periapical infection is the condition of the tooth tissues at the apex of the root. A tooth which has been surrounded for a long time by an abscess becomes pus-soaked, and forms an obnoxious foreign body, which can be best compared with a bone sequestrum. Microscopic examination shows that absorption takes place, which can be recognized in a good Roentgen film, first by an indistinct outline of the tooth, later by roughness and loss of tissue. Evidence of such absorption indicates that nature wants to dispose of this tooth. No antiseptic treatment can restore it to normal and it is a case for surgical treatment.

In cases of extraction it is also important to find out whether the root of a tooth is enlarged due to hypercementosis. Such teeth should be removed by the use of a different technique, than that used in ordinary extractions.

#### THE RELATION OF DENTAL DISEASE TO DISEASE OF THE MAXILLARY SINUSES

Infection of the maxillary sinuses is quite frequently of dental origin and in many other cases diseased teeth become an important contributory cause. Chronic dental infection, such as occurs on pulpless teeth, is frequently the etiological factor. Chronic infection of the maxillary sinuses, with polypoid degeneration of the mucous membrane often develops without the patient's knowledge, and is discovered only in routine examination. If therefore infection of the maxillary molars and bicuspid is diagnosed from the roentgen picture, sinus disease should always be considered as a possibility, and roentgen pictures of the head should be taken for investigation. On the other hand, in cases of sinus symptoms, or sinus disease roentgen investigation of the teeth should not be neglected, before any treatment is undertaken.

It should also be remembered in connection with a probable dental cause that a small shadow around a root does not necessarily mean that the dental condition is negligible, because in some cases there is not enough bone between the sinus cavity and the alveolar socket to become destroyed, and formation of a large abscess cavity is impossible. Such a condition is more liable to cause sinus infection than a tooth with an extensive abscess cavity well removed from the floor of the sinus. This is well illustrated in my own case. The



pulp of the right maxillary bicuspid was removed several years ago, on account of an exposure made by the dentist when preparing a tooth for a cohesive gold filling. About one year ago, a roentgenogram was taken, which showed a very slight periapical infection. The root canal was treated experimentally by various modern methods, and then filled under strict asepsis. A bridge was attached to the tooth, and sometime later it became slightly tender until one morning a fullness and throbbing sensation was felt in the region of the right maxillary sinus when stopping hard. A small amount of gelatinous substance was discharged through the right nostril. An anterior-posterior roentgen picture, taken the same day showed that the right maxillary sinus was cloudy. On transillumination it was entirely dark. The tooth was extracted at once and a probe passed into the alveolar socket, showed that there was no opening through the floor of the antrum. No further treatment was resorted to; the symptoms disappeared, and, after seven weeks, the sinus was clear on transillumination and in the roentgen picture. Another picture taken from Water's position a year later showed the maxillary sinus had remained normal. This case also teaches that it is not necessary for the dental infection to have direct communication with the cavity of the sinus. The infection may spread through the Haversian canals of the bone.

Dental cysts sometimes invade the maxillary sinuses. Periodontal cysts developing from the maxillary bicuspids or molars, or dentigerous cysts originating from misplaced tooth germs, often encroach upon the maxillary sinus. In three cases of periodontal cysts which I have observed, the lesion was so large that it filled the sinus cavity almost entirely. In all three there was a thin body wall separating the remaining part of the sinus from the cyst cavity. The roentgen picture shows radiopaque tissue in the lower part of the maxillary sinus. This is nearly always separated from the normal part (which remains radiolucent) by a clear, well-defined light line, usually a segment of a circle. A dental film should be taken to show the relation to the teeth.

#### IMPORTANCE OF EARLY ROENTGEN DIAGNOSIS.

Extensive lesions of the maxillae, such as otitis, osteomyelitis, and cysts, remain generally undiscovered for a long time. Not accompanied by any distinguishing symptoms, pulpless teeth associated with them, according to the histories



of many cases are often treated for months by means of root canal medication without an accurate diagnosis, such as could have been made by the use of the roentgen ray. The jaws, therefore, are frequently seriously involved when the patient finally consults a roentgenologist or oral surgeon. Every dentist should be familiar with the various types of bone infection and their clinical and roentgen aspects. The following are a few cases, in which the true nature of the disease was not recognized in the beginning because no roentgen examination was made.

*Case of diffuse osteomyelitis.* The patient had had pain on the right side of the jaw for several weeks. He had had several teeth treated and afterwards extracted. There were very marked constitutional symptoms and the patient was in bed five days. When last seen by his dentist, extraction of the left mandibular third molar was advised. This was the only tooth remaining on that side. Examination showed swelling on the cheek and a fistula discharging pus into the mouth. The third molar was perfectly firm, but the incisors were tender on percussion. Temperature, 100. Pulse, good. No severe pain. Roentgen examination of the jaw advised which showed large pieces of bone, separated by dark shadows, indicating extensive osteomyelitis of the mandible, with several sequestra.

*Case of cystic odontoma.* The patient, a boy of 16 years, had noticed a swelling under his upper lip for several months, the left maxillary lateral and central incisors being somewhat tender to touch. His dentist opened the lateral incisor, removed the pulp and treated the root canal. Whenever the root canal dressing was removed, a yellowish fluid escaped from the tooth. The root canal treatments failed to help the condition and the gum was lanced several times, without result. When the boy was first brought to me for consultation, a roentgen picture was taken, from which a diagnosis of cystic odontoma was made. Note the dark area with definite outline, indicating a cyst cavity in the bone. The radiopaque substance in the centre of the cyst is an odontoma.

*Case of pus discharge persisting after extraction of a tooth the cause being an infected cyst.* In this case there was pus discharged from a fistula on the gum over the right maxillary incisor. The central incisor had been extracted and a bridge constructed to replace the tooth, but pus continued to discharge from the socket. A roentgen picture

revealed a cystic cavity, partly connected with the socket of the extracted tooth and the apex of the lateral incisor protruded into it. The discharge from the socket came from an infected cyst.

*Case of Extraction of teeth without Diagnosing a Large Cyst.* The patient (Mrs. C. E. B.) complained of indefinable, dull pressure in the right side of the maxilla. At times she noticed discharges of pus on the gum, which when it occurred relieved the pressure. Several teeth had been extracted at different times, with only temporary relief. Examination showed a large swelling on the entire right side of the hard palate. When the alveolar process was punctured through the socket of one of the extracted teeth a yellowish fluid was released. Roentgen examination revealed a large cyst extending into the maxillary sinus and palate.

All these cases illustrate the great aid of the roentgen that examination in diagnosis and a careful, systematic investigation is absolutely essential when treating surgical diseases of the jaws. The general practitioner who realizes this will see the advantage of making an appointment for examination first, when referring his patient to the oral surgeon, which will also give the latter the opportunity to determine whether the case is suitable for the office or whether it should be taken to a hospital and whether local or general anesthesia is advisable.

#### MINOR ORAL SURGICAL OPERATIONS

##### DIFFICULT EXTRACTION OF TEETH

Conditions which make the extraction of teeth difficult are the following:

- a. Abnormal position of the tooth. Under this heading belong all impacted and unerupted teeth, the removal of which I shall consider separately.
- b. Abnormal formation of the tooth. Bent or curved roots, abnormal formation of cementum causing exostosis on vital teeth.
- c. Changes of the tooth tissue. Pulpless teeth which have been cut off from nutrition for several years become very brittle and not strong enough to be removed by means of forceps.
- d. Pathological changes at the apex causing either hypercementosis or ankylosis between tooth and bone.



*Diagnosis.* The diagnosis is made by means of one or more roentgen pictures.

*Operation.* If the case is considered a difficult extraction the operator should resist the temptation to try the forceps first, because unsuccessful attempts make not only a bad impression on the patient, when local anesthesia is used but will also cause unnecessary destruction of the surrounding tissue.

The technique should be carefully planned keeping the following rules in mind: Safeguard the soft tissue by means of incision, flapp and protecting retractor. Cutting the tooth into parts is preferable to destruction of bone. If bone must be removed preserve the alveolar border if possible, remove a septum between two roots rather than the cortical plate. Only if these methods are not applicable should we choose the removal of the labial or buccal cortical plate. After removal of the tooth smooth the margin of the bone wound by means of a large surgical burr and look carefully for fractured pieces of tooth, bone or filling material which may have dropped into the socket. Place the soft tissue flapp back into its place and secure it by means of one or two horsehair sutures.

*Post-operative treatment.* Post-operative treatment is of great importance. No matter how skillfully the operation was performed swelling or post-operative pain or both must be expected and after performing a painless operation the patient should not be left in ignorance regarding the possibility of post-operative effects. The susceptibility of the individual plays an important factor, it is influenced by race, temperament, mental attitude and state of health. The highly nervous patient will exaggerate but just the same the suffering is real to him. With a little forethought it is possible to keep the patients comfortable. Swelling of the face can be prevented to some degree by advising the patient to use cold applications, such as an ice bag soon after the operation, it should be kept one hour on and one hour off. For pain give the patient also instruction for palliative measures. Prescribe an anodyne such as Empirin for gr X, in more severe cases empirin and Phenacetin gr V of each. I often give the patient the latter right after the operation, when performed in the office directing them to repeat when they feel the pain come on. If these drugs are not sufficient phenacetin gr. III, sodii bicard. gr V, codein sulph. gr  $\frac{1}{4}$  and caffen gr I in capsules or powders may be given. Repeat after three hours



if not relieved. Remedies applied on dressing may be used Guaiacol and glycerine equal parts applied on a piece of steril gauze is often very effective. I prefer to let a blood clot form in the wound, as it insures quicker healing and only use a dressing in cases which do not heal promptly. Every case of difficult extraction should be seen at least once more, and generally daily until healing has been completed.

### THE REMOVAL OF BROKEN ROOTS

This includes roots broken while attempting an ordinary extraction, roots which remained in the jaws from past incomplete extractions and have become enclosed in the bone, covered over by bridges or impacted between roots of teeth which moved together.

*Diagnosis.* Locate the root by means of one or more roentgen pictures or by means of a stereoscopic picture. Note anatomical relations such as the inferior dental canal, mental foramen dental or maxillary sinus and plan the operation so as not to interfere with them.

*Operation by removing the root through the alveolar socket.* This operation is applicable for cases of recent standing the alveolar socket not having healed or being filled with fresh granulation tissue.

a. In multiroot teeth. Clean out the socket, irrigate with warm steril saline solution and stop the bleeding with adrenalin if necessary. Remove the interalveolar septum with a burr and raise the root with an elevator.

b. In single rooted teeth. A U-shaped incision is made and the mucoperiosteal flapp raised from the bone and retracted. With burr cut an opening through the outer cortical layer of bone so as to reach the apex of the tooth. Enlarge this opening sufficiently so as to bring the root end into full view, then insert a fine bladed elevator underneath the root and push it out of the socket from which it can be removed with forceps. Remove infected tissue if there is any, smooth the bone margins and replace the flapp, secure it with horse hair sutures.

*Post-operative treatment* as for difficult extractions.

*Operation by removing root through alveolar window.* This method is used if the root is under a bridge, if the alveolus is closed and the gum normal at the alveolar creast and when the neighboring teeth have moved together causing impaction of the root.

Expose the bone by the flapp method just described, cut a window through the outer layer of bone by means of chisel or with burr and expose the root but leave the alveolar border intact. To further safe-guard the alveolar border and with it the shape of the gum remove the root with the apex coming out first. An elevator will do this easily. Smooth bone, apply iodine, let fresh blood fill the cavity and suture the flapp into place.

#### APICOECTOMY.

Apicoectomy or rootend resection has the purpose of eliminating not only periapical infection but also the part of the tooth which is the main cause of these latent infectious lesions, namely the necrosed root apex. The operation may be performed on one or several adjoining teeth.

*Prognosis.* In well selected cases this operation if carried out properly will show a very high percentage of success. Patients with marked lowered resistance and those suffering from other foci of infection are not suitable for this operation.

*Prognostic Roentgen Examination.* Before undertaking apicoectomy on a tooth, the condition should be carefully studied. With the aid of a roentgenogram, observe the shape of the root and the extent of the abcess cavity. If too much of the root has to be excised, there will not be enough alveolar process left to hold it firmly after the operation. A tooth with alveoloclasia is, for the same reason, not favorable. Neither should a tooth be operated upon if there is another infection in the immediate neighborhood, as this would, directly or indirectly, reinfect the healing tissue.

*Treatment of the Root Canal.* Apicoectomy is only successful if the root canal has been sterilized and properly filled previous to the operation. It is not sufficient simply to amputate the root where the old fillings end; but the root canal and dentinal tubules have to be sterilized, or there will be reinfection from the tubules exposed where the root is cut. If it is not worth while to remove a crown and treat the root canal, the tooth should be extracted or there will be recurrence (with or without symptoms) and the patient is as badly off as before.

*Preparation for the Operation.* The operation should be performed on the principles of aseptic surgery. The patient is covered with a sterile sheet, and in order to exclude



the hair, the head is covered with a sterile towel except over the eyes, nose, and mouth.

*Operation.* The lip is retracted by the assistant with a lip retractor. One steril is placed on either side of the part that is to be operated so as to prevent saliva entering the field of operation. The mucous membrane is dried with sterile gauze and painted with  $3\frac{1}{2}$  per cent. tr. iodine. With a flap knife make a "U" shaped incision. Lift the periosteum and gum from the bone with the sharp periosteal elevator. Insert a suitable gum retractor and use gauze to remove the blood. The alveolar process is now visible if it has not been destroyed by the infection. A good-sized opening is cut with the chisel and mallet, or by aid of the burr to get a clear view of the apex of the root. Resect the apex with a fissure burr as far toward the cervical part as is necessary to remove all parts which are necrosed. Remove the resected apex with a suitable elevator. The granulation tissue is removed with a curettie or with a round burr or both until healthy bone is visible on all sides. Smooth carefully with the burr all sharp points and margins of the alveolar process. Do not shape the distal part of the tooth like the end of a root, as it is sometimes advised, because this decreases the amount of attachment with the bone. I prefer to have one round, clean cavity without anything projecting into it. Wash with normal salt solution, remove all the debris, sponge, and sterilize the whole cavity with  $3\frac{1}{2}$  per cent. tr. iodine. Remove the excess with sterile sponges and stimulate bleeding with a suitable instrument. When the cavity is filled with blood draw the flap over the opening and sew it carefully with three hair sutures.

*Post-operative care.* Swelling of the lip, when the operation has been performed on anterior teeth, must be expected but does not always occur. Cold applications as described can be recommended for prevention. Pain is unusual.

*Healing.* If proper aseptic care has been taken, a good union of the gum is obtained in a short time. The stitches are removed after three days and if horsehair has been used, this causes little or no discomfort. In my mind, the sewing in the mouth is of greatest importance; it prevents re-infection from saliva and the fluids of the mouth. The healing of the bone cavity occurs by organization of the blood clot, and bone is later formed from this tissue. In some of the radiographs it can be seen how the trabeculae of bone grow into



the cavity. Ultimately the tooth becomes ankylosed at the end to the newly formed bone.

### EXTRACTION OF TEETH AND PREPARATION OF JAWS FOR DENTURES

To my way of reasoning the most important part in removing all the teeth for full dentures is the preservation of the bone of the alveolar process. It is true that in a number of cases a piece of the alveolar process adheres to a tooth and is fractured and removed, but I do not think that this is a good reason for chiseling away the outer alveolar plate in every case.

*Diagnosis.* Roentgen pictures should be taken of all the teeth to locate periapical bone infections and teeth presenting difficulties in extraction.

*Operation.* All easy extractions are done first, next we take the difficult extractions and imbedded roots. After all the teeth are removed infected granulation tissue is curetted through the sockets and all debris cleaned out of the wound. The gum is then trimmed with knife or scissors and elevated from the alveolar margin for a very short distance. After inserting a retractor to protect the soft tissue a large round surgical burr is used to plane down sharp ridges of bone and round over projecting corners. When the entire bony ridge is so prepared we bring the gum margins together and suture.

*Healing.* If all sharp places have been removed under the gum a plate can be worn after a few days with a great degree of comfort.

### THE REMOVAL OF IMPACTED LOWER THIRD MOLARS

As there are so many different positions in which we may find an impacted third molar in the lower jaw let us first consider how we can classify the different types. Clinical examination will show that the impacted molar is either normal or causing infection of the surrounding tissue, we find it either unerupted or partly erupted.

*Roentgen Examination* will determine its shape and position. The tooth is either straight or curved mesially or distally and the position may be 1. upright, 2. mesio-oblique, 3. Disto-oblique and 4. mesio-horizontal and 5. the tooth may show lingual or buccal displacement.

The roentgen picture should give information about all these points and therefore it is important, that, there is as

little distortion as possible and that the entire tooth is shown. Place film as far back into the mouth as possible, the upper edge parallel with the occlusal plane of the molars and bicuspids and the rays directed vertically on the film. When the tooth is in an unusual position an extra-oral plate should be taken.

*Operation.* In planning the operation we must determine:

First: In which direction the tooth can be moved. If it is upright straight, without curvature at the roots, it can be removed in a vertical upward direction. If the tooth is curved it must be removed in the direction of its curve, no matter what its position.

Second: What are the obstructions to its removal. If the tooth is to be rotated distally a certain amount of bone will be cut away at its distal side, if it is to be rotated mesially obstructing bone at the mesial side will have to be removed. Sections of the crown may have to be taken out separately, to overcome difficulties, such as impaction under the second molar or to create a space into which the rest of the mouth can be rotated. I prefer to remove the tooth in sections instead of removing large portions of the jaw.

An operation performed skillfully is better than an operation performed with great force and the time factor is of no importance when accidents, such as fracture of the mandible, injury to the inferior dental canal and trauma of the second molar can be prevented.

1. *Simple lever technique.* Partly erupted teeth are often only covered by mucous membrane and can be removed by means of lever action after the gum has been incised sufficiently to allow the tooth to pass through. A straight bayonet shaped lever is applied on the convex side of the tooth. Rotation of the lever will cause it to be dislocated and raised. To determine the distribution of the force applied keep in mind the parallelogram of forces and you will know how much of the force will act in a vertical direction and help raise the tooth and how much will act in a horizontal direction. The latter will help to rotate the tooth and if it is very much greater than the former and resisted on the other side of the tooth, it causes fracture of the jaw.

2. *Lever technique with bone resection.* An incision is made along the lingual side of the post molar triangle, this is continued immediately behind the second molar, proceed



at right angle to the first incision and extend it well down on the buccal side of the gum. Detach the muco-periosteal flapp from the bone and insert a retractor. With a surgical burr remove all bone overlaying the crown of the tooth. You have determined from the roentgen picture whether the tooth can be raised vertically or whether it is necessary to rotate it.

If the tooth can be elevated vertically, insert an elevator at the buccal side of the tooth and using the thick cortical bone at the outside of the mandible as a fulcrum, dislodge and raise the tooth. It may be necessary to drill a hole into the buccal side of the tooth into which the tip of the elevator can be inserted.

If the tooth is curved and has to be rotated it is necessary to resect additional bone to furnish space into which the tooth can be moved. This again is accomplished the quickest with a surgical burr. The next step is to apply force by lever action to dislodge the tooth.

3. *Lever technique with tooth resection.* The tooth is exposed as just described but instead of creating the needed space for rotation of the tooth by resection of bone a slice is cut off the tooth instead. If the tooth is to be rotated distally both methods can be employed. If the tooth is to be rotated mesially resection of bone would cause injury to the peridental tissues of the second molar while oblique resection of the mesial part of the crown will furnish space without endangering neighboring organs. If the tooth is in a disto-oblique position an oblique slice of the entire crown is removed.

The section of the tooth is made with a burr in a right angle hand piece. The smaller piece of the crown is removed first with an elevator which has a long, narrow blade extending out at right angle. The remaining part with the root is then taken out after dislocating it with a lever applied at the convex side of the tooth, or by means of an elevator with heavy right angle blade, inserted into the pulp chamber.

4. *Bisection of the tooth.* This method is used when rotation of the tooth would dislocate the second molar. The tooth is exposed as described. With burr we bisect the tooth at a convenient place. The nearer the neck of the tooth this is done the easier will it be, because of the thinness of the enamel at this part. This procedure should also create sufficient room to allow for easy removal of the crown with an



elevator. Sufficient bone is then resected to allow rotation of the root, which is accomplished by the use of an elevator either in the pulp chamber or on the buccal side of the tooth. Dressing of the wound. After the tooth and roots are completely taken out a large round surgical burr is employed to eliminate all sharp bony projections and after swabbing out with tincture of iodine the flapp is sutured into place.

After care consists in rest, cold applications on the outside of the face, daily irrigation with a mild antiseptic solution and prescription of anodines for pain if needed.

#### THE REMOVAL OF IMPACTED MAXILLARY THIRD MOLARS

Impacted maxillary third molars are also either partly or entirely unerupted. With the exception of very rare instances they are in a mesio-oblique position.

*Operation.* Make an incision over the creast of the (tuberosity, nearer the palate than the cheek. Extend this incision in a vertical direction over the buccal part of the gum and raise the muco-periosteal flapp. The location of the mesial side of the tooth has been estimated from a study of the roentgen picture, insert an elevator with a sharp, fine right angle blade through the thin buccal plate of the alveolar process and by rotating the instrument dislodge the tooth and press it down into the wound where it can be taken hold of with forceps or pliers. In some cases it may be necessary to remove a certain amount of bone over the occlusal surface of the tooth. Replace the flapp and fasten with one suture.

#### THE REMOVAL OF IMPACTED MAXILLARY CUSPIDS.

It is advisable to remove impacted cuspids at an early age when found, because the dental follicle at this age is fairly thick and facilitates the operation. In older people it is better to bisect the tooth because the application of undue force causes quite often injury to the lateral incisor tooth.

*Diagnosis.* The buccal or palatal position is ascertained either by stereoscopic roentgen picture or by means of two exposures. Raper's rule is: The impacted cuspid when located in the palate changes in the picture in the same direction in which the tooth is shifted for the second exposure.

*Operation.* Make an incision along the alveolar margin of the gum and extend it in the median line posteriorly, avoiding too close proximity to the incisive foramen. Raise the muco-periosteal flapp, draw a silk suture through it and

pull it back fastening the silk between two molars on the opposite side.

Remove the bone over the tooth with chisel, the apex and tip of the crown does not need to be exposed. Bisect the tooth with right angle burr and remove crown first and the root later, inserting the elevator into the pulp chamber or the palatal side of the tooth.

After complete removal smooth the bone and fasten the flap into place with three sutures.

#### ARTIFICIAL ERUPTION OF CUSPIDS

Unerupted malposed cuspids can be erupted artificially in young people up to the age of 25. The tooth is led into its normal place by means of slight pull applied by an orthodontic appliance. An extension from the arch wire can be tied to the tooth for this purpose.

*Operation.* The operation consists of making a circular incision clear through the periosteum and down to the bone. Remove entirely these tissues, so as to make an opening slightly smaller than a penny. If local anesthesia is used there is very little bleeding. If the operation is performed under a general anesthetic, however, it is advisable to also use local anesthetic to decrease the bleeding, or apply adrenalin from time to time for its haemostatic action.

The bone over the crown of the tooth is next removed by means of small chisels, and if the right place has been selected the white enamel will be visible as soon as the first piece of bone is removed. Sufficient bone is then cut away to expose the entire crown of the tooth. Burrs may be used for this purpose if they are very carefully handled, so as not to injure the enamel. After this is done the bone is removed in the place where the tooth is to erupt, so that there will be a free space into which the tooth may be moved. The tissue next is cauterized with an electric cautery to prevent as much as possible granulations closing up the wound. Pack with iodoform gauze or, better still, very soft thin rubber tissue.

After two days a hole is then drilled into the tooth at a suitable place according to the surface exposed and a previously prepared platinum loop wire cemented in. The extension wire from the orthodontic arch is attached to this loop by means of a wire or ligature and adjusted so as to exert slight tension, which is applied continually until the tooth has been erupted enough to attach to its crown a band. The rest of the treatment is an ordinary orthodontic problem.



Gentlemen, the scope of the two subjects of my paper is broad and can be elaborated in many ways and extended in various directions should the time permit. I hope that my selection has been interesting to you and has developed thoughts in your minds which will further this branch of our profession.

## Rules Governing the Admission of Proprietary Articles to the Book of New and Nonofficial Remedies

*(Concluded from March Issue)*

*Advertisements in Foreign Countries.* — The Council deals primarily, in the interest of the public and of the medical profession, with articles proposed for admission to New and Nonofficial Remedies, and, in determining the status of any article, must take into consideration any statements made regarding it or any method of advertising it employed by the manufacturer or his authorized agents or representatives, whether in this country or abroad. The Council will not regard as within its scope, however, questions concerning the marketing of articles (except the matter of direct advertising to the laity and unwarranted claims or misrepresentations) in any country which has a public body corresponding to this Council.

*Rule 4.—INDIRECT ADVERTISING.*—It should be remembered that the sole intent of this rule is to protect the physician, so that in prescribing a proprietary medicine he shall not unconsciously advertise proprietary preparations. The rule imposes no restriction on the legitimate methods of bringing a remedy to the attention of the profession, such as advertising in medical journals, circulars and other printed matter distributed solely to physicians. The rule applies only to the package as it may reach the patient.

*Naming Diseases on Label.*—The naming of diseases on the label or package is not necessary, as is shown by the very large number of proprietary products which have been successfully introduced without resorting to this expedient. This method of popularizing a proprietary remedy with the laity is most objectionable, and should not be tolerated in any form.

*Therapeutically Suggestive Names.*—In general, therapeutic indications should be omitted from the label and



package. The Council will not insist on this point, however, when such indications are so given as not to promote self-medication, particularly in diseases which require expert diagnosis and supervision.

*Permanently Affixed Names.*—It will be considered an infringement of the rule if an article be marketed in bottles which have the name of the article blown into the glass, or if otherwise the name or initials or other distinctive mark of the article are permanently stamped on the container, on the article itself, or are on the stoppers or seals. Articles which are marketed in any of these ways are not accepted for New and Nonofficial Remedies. Readily removable labels are not objectionable nor is the permanent affixing of the firm's initials or name to the trade package if such initials or name be not suggestive of the article.

*Use of Articles for Advertising.*—The Council does not countenance the use of an accepted article for advertising other articles which have not been accepted by the Council.

**RULE 5.—FALSE CLAIMS AS TO ORIGIN.**—No false or misleading statement in regard to an article can be permitted concerning the source or material from which it is made, or the persons by whom it is made. Some glaring frauds of this nature have been perpetrated in the past, and this rule is intended to prevent such imposition.

**Rule 6.—UNWARRANTED THERAPEUTIC CLAIMS.**—This rule insists that the claims of manufacturers or agents concerning the therapeutic properties of their products must be compatible with demonstrable facts. Manufacturers will be held responsible for all statements made or quoted in their advertising "literature" regarding their products. Recognizing the existence of honest differences of opinion on many therapeutic questions, the Council desires to be liberal in the application of this rule. It is natural that a manufacturer should be partial toward his own product, and a moderate degree of emphasis in advertising may not be objectionable. The Council, however, will not admit claims which are neither in harmony with already accepted facts nor supported by acceptable evidence. In doubtful cases the Council considers these questions with the advice and co-operation of its staff of clinical consultants.

*Clinical Evidence.*—To be acceptable, the clinical evidence must offer objective data with such citation of authority as will enable the Council to confirm the facts and establish

the scientific value of the conclusions drawn. Clinical data are worthless when the author is not cited. The facts on which claims with regard to the value of a remedy are based must have been rendered accessible for investigation and confirmation by disinterested observers, either through publication or through the records of a hospital or other institution.

*Rule 7.—POISONOUS SUBSTANCES.*—For the information of the pharmacist or dispenser, and to enable him to safeguard the interests of the patient and the physician, all articles containing such potent agents as the poisonous alkaloids and other organic substances and the salts of some of the metals, should have the exact amount of these ingredients which is contained in the average adult dose stated on the label.

*Rule 8.—OBJECTIONABLE NAMES.*—Many of the abuses connected with proprietary medicines arise from “coined” proprietary trade names. Such names will not be recognized by the Council unless in particular instances the Council shall deem their use to be in the interest of public welfare. In every such exception the burden of proof therefor, both for establishing and for continuing the exception, lies with those who market the product.

*Proprietary (“Trade”) Names Where Permitted.*—In consideration of the benefits which may come from the discovery of a therapeutic agent, the Council concedes to the person or firm which, by right of discovery, controls such a product the right to name it. The Council will offer no opposition to an arbitrary name for such a new product, provided it is not misleading, therapeutically suggestive, or otherwise subversive of scientific pharmacy and therapeutics. If the discovery that a previously known substance has therapeutic value is deemed of sufficient importance, the Council may recognize a name for such a substance if the name be applied by the person who makes the discovery; or, with the consent of the discoverer or in the absence of any protest on his part, the Council may recognize a name applied by the firm which first makes such a product available to physicians. In the interest of rational drug therapy, the Council recommends that trade names be coined so as to indicate the potent element or constituent.

When the proprietary or trade name for an article is considered insufficiently descriptive of its chemical composition or pharmaceutical character, the Council may require as a condition for the acceptance of such articles that a descriptive



scientific name satisfactory to the Council appear on the labels, circulars and advertising for such an article. For all definite chemical substances it is required that the scientific name be given prominence on the labels, in circulars and advertisements.

*Proprietary Names for Unoriginal Articles.*—Proprietary names will not be recognized for articles which are included in the U. S. Pharmacopoeia or National Formulary or for unessential modifications of such articles. Neither will proprietary names be recognized for substances or mixtures which are described in medical or pharmaceutical publications.

In the marketing of unoriginal articles, the legitimate interests of the producer are fully served by identifying such products by appending the name or initials of the manufacturer or agent, or by the use of a general brand mark. No objection will be made by the Council to the use of such brand marks, provided that in no case shall such mark be used as a designation for an individual article.

For any product which, by reason of the absence or lapse of patent rights or for other reasons, is open to manufacture by more than one firm, the Council reserves the right to select a common name and to provide standards of identity, purity and strength, and then will accept such article only if it is marketed under the title adopted as the N. N. R. name or the name under which such article was introduced (to which may be appended the firm's identifying mark).

When an article which has been accepted for New and Nonofficial Remedies is admitted to the U. S. Pharmacopoeia or National Formulary, it will be omitted from New and Nonofficial Remedies one year after such standardization if the name of such article is used in these standards either as the main title for the product or as a synonym. If the name under which the article is described in New and Nonofficial Remedies is not used in these books of standards, the proprietary preparation will be retained provided the official name is given prominence on the labels and in the circulars and advertisements of such article.

When the Council adopts a common name for an article that has been admitted under another name, it will be continued under the older name only on condition that the Council name be given prominence on the label and in the circulars and advertisements for such article.



*Pharmaceutical Preparations and Mixtures.*—These, with rare exceptions, are not original in composition and there is seldom any reason why they should be endowed with arbitrary names. On the contrary, it is important that the prescriber should be reminded constantly of their potent ingredients.

*Therapeutically Suggestive Names.* — Articles bearing therapeutically suggestive names will not be accepted for New and Nonofficial Remedies, first, because they are likely to lead physicians into prescribing names instead of remedies, and second, because they tend to encourage unwarranted self-medication by the laity. Even if the name be at first apparently meaningless to the public, its meaning will soon be understood because patients soon learn the technical names applied to their diseases and symptoms.

The prohibition against therapeutically suggestive names is not applied to serums, vaccines and antitoxins because the accepted nomenclature of the specific organisms used in their preparation makes this unavoidable and because self-medication with them is improbable.

*Rule 9.*—PATENTS, TRADEMARKS, COPYRIGHTS, ETC.—This information is important as a means of determining the legal status of medicinal articles and as an aid to their ready recognition in current publications.

*Rule 10.*—UNSCIENTIFIC AND USELESS ARTICLES.—The use of articles which are unessential modifications of official or established nonproprietary articles is unscientific and serves no useful purpose. The Council will not accept products which are scientifically unsound and which, therefore, must be considered useless or inimical to the best interests of the medical profession and the public. This class includes compounds or mixtures containing an excessive number of active ingredients; those compounds or mixtures the components of which are of no probable assistance to each other and those articles which are of no therapeutic value.

UNESSENTIAL MODIFICATIONS OF OFFICIAL SUBSTANCES.—*Imitations.*—The subterfuge of obtaining proprietary rights over an official or established nonproprietary product, by introducing unessential modifications, also tends to confusion and abuses, and such articles will not be admitted by the Council. Essential and important modifications, however, will receive recognition. (The Council interprets the term “established nonproprietary product” to apply to a preparation of

any formula which has been published through any recognized or reasonably accessible channel of publication, prior to its appropriation or modification by a manufacturer.)

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## A Few New Viewpoints of Dental Pathology

*(Continued from February Issue)*

(h) The various expressions of different types of reaction, local and systemic, are directly related to fundamental factors of blood chemistry, blood morphology, and blood bactericidal property, for certain types of organisms, chiefly the strains of streptococci and diplococci.

(i) The decreased defensive forces of the blood can often be enhanced, and in some cases very greatly so.

(j) A long continued, or chronic, dental infection, which may have given no suggestions of tenderness, may (because of the absence of a local warfare and defensive fight) cause the breakdown of certain organs or tissues of the body, though it may take months or years to do it, during which time the tooth involved may never even be suspected.

(k) Thus, very many of the degenerative, or so-called old age, diseases may have as their contributing or as their principal causative factor, such an obscure dental focal infection, with or without local or systemic contributing overloads. These degenerative processes may include various types of eye involvements, including blindness, heart involvements of many types, several types of kidney disease, mild and grave nervous, system and brain diseases, many digestive tract diseases, ovarian cysts, a large percentage of the cases of arthritis, many types of skin lesions, several of the allergic disturbances, etc., etc. He believes that he has demonstrated that almost any structure of the body may be involved and many pathological states, which have not been considered to have even a remote relation to focal infection, are now demonstrated to be influenced by them.

Before taking up the detailed study of this problem, he discusses one of the most important of the methods used for making the diagnosis of dental infections—namely, the use of the Roentgen-rays. He assumes that it is currently believed that the actual conditions about teeth are largely as they appear to be in the roentgenograms. That this is not



true he believes to be one of the greatest misfortunes which could possibly exist in relation to dental infections, since in them we are dealing with pathological states within vital structures and therefore beyond the possibility of direct examination. The roentgenogram has been spoken of as the living postmortem. The author states that we would not presume to photograph a dog behind a tree for most obvious reasons, yet we do presume to make roentgenograms of the various structures, such as roots of teeth behind other roots, or behind such dense bones as the malar bone, and of rarefied areas behind zones of condensed structure, without the information that would make possible the correction necessary for the intervening obstruction. This is abundantly demonstrated by illustrations comparing the roentgenogram with the actual photographic appearance of various conditions that we are called upon to interpret and differentiate.

The above sketch suggests the line of discussion in the first five chapters; the other thirty-nine take up similarly various involved factors. The interpretations of these forty-four chapters are given in nine chapters, 45 to 56, and the general summary is presented in Chapter 57 of Volume I. Volume II. presents the application of these principles to a large number of cases in which the various lesions are grouped for consecutive consideration.

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## Societies

The Ontario Dental Association will meet in the King Edward Hotel, Toronto, May 26, 27, 28, 29, 1924. Drs. Johnson and Gallie of Chicago will be present.

The Winnipeg Dental Society completed a year of active work and elected officers for 1924-25 as follows:

Pres., D. A. McCarten; Vice-Pres., H. W. Mitchell; Sec.-Treas., Everet L. White; Committee, B. E. Brownlee, and Kenneth Johnson.

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## The American Dental Society of Europe

The annual meeting of this Society will be held in the Hotel de l'Europe, Amsterdam, on August 5, 6, 7 and 8. Special rates have been accorded by the management of the Hotel to all those attending the congress.

## Bluenose Blood

From where Old Fundy's turgid tide roars, boiling, up the  
Bay

To where Cape North keeps sentinel o'er the Atlantic, grey,  
There is a breed of sailormen known to the Seven Seas  
And Neptune is the ruling lord of their wide destinies.

The North Atlantic is no place for pleasure's flannelled  
guests,

Thick fogs and threat'ning, sullen clouds lower o'er its heav-  
ing crests.

That hold the menace of the berg and stress of grinding ice,  
'Twas here the Bluenose waged a war that knew no armistice,  
'Twas here the Bluenose learned his trade in fog and freez-  
ing sleet;

Small wonder that he deemed the rest as dross beneath his  
feet.

There is no sea that has not seen his bulging canvas spread,  
There is no sea that does not sleep some of his hallowed dead;  
From Baffin's Bay down to the Horn, from Frisco to Bris-  
bane,

He goes and comes in his day's work and some come not  
again.

In the dread port of missing ships there lies a ghostly fleet,  
Sent there by fog or hurricane, by berg or driving sleet.

Perchance, thin phantoms pace the decks and glory in their  
past

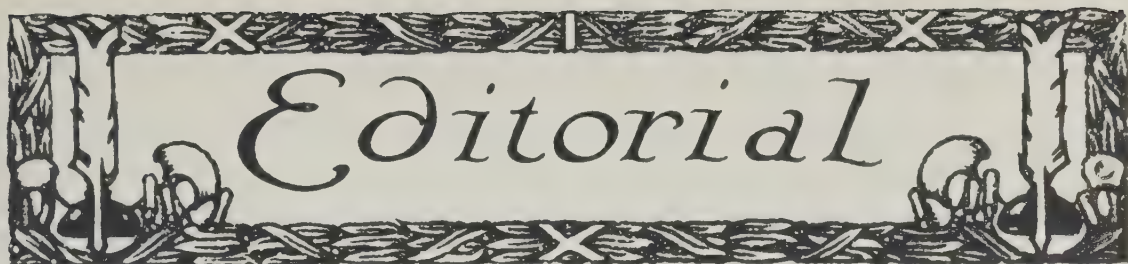
For what is Death to Bluenose Blood that it should stand  
aghast?

Stark Death must come to all alike, small matter where or  
when,

So that they see their duty through and dying, die like men.

MARK G. McELHINNEY, D.D.S.





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Vol. XXXVI

TORONTO, APRIL, 1924

No. 4

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## The Selection of a Professional Calling

Generally speaking there is no strictly professional class, but the professional classes in the United States, which are roughly ten per cent. of the population, supply forty per cent. of the professions. One authority on the subject of choosing a calling says "When in doubt follow the family job." It is a recognized fact in manufacturing that the best mechanics are to be found in centres where a particular article has been made for generations. Sheffield is known as the centre for the manufacture of cutlery, and Salem the centre for shoes. In these places will be found the highest development in steel workers and shoe makers respectively. Similarly, one would expect to find children of the professional classes the most suitable to fill the professional callings.

The test for the suitability of any one to follow a profession is one of brains. Many a professional man would have succeeded equally well in another calling. Several professions require the same kind of abilities and yet the writer of beautiful prose might have failed as a sculptor or as an engineer. The young man or woman who can go through the High School course in the regular way should have no diffi-

culty in carrying through a professional career. The successful study of Latin is said to be the crucial test for a professional calling. If a youth enjoys the mental exercise of thinking clearly on an uninteresting subject, it is evidence of his capacity to succeed in a professional calling. Mere childish smartness must not be mistaken for ability, it is only precocity. The professions demand great capacity to work, and independence of thought and action as well as power of self direction. Persons who develop slowly finally do better in a professional calling than in other occupations.

The dentist in all respects should have the same abilities and attainments as the physician, but in addition should have the touch of the artist, the imagination of the engineer, the handicraft of the mechanic, and the accurate knowledge of the physicist. The dentist should have a natural bent for science and tools, visual memory and power to make deductions upon facts. He has little need for the leadership of men or for public speaking, but above all he has a need for an honest purpose in life.

The qualities which make for the successful practise of dentistry are character first, judgment second, resourcefulness third, technique fourth, efficiency fifth, psychology sixth. Outside of medicine, there is no calling where there are so many opportunities for practising deception, with such far reaching baneful consequences as in dentistry. The patient not only loses his money but also his health by dishonest dental practices. A young man who has an ancestry of promoters, or salesmen, where the purchaser was supposed to know the value of the purchased article, has a severe handicap in a professional calling, and especially so in dentistry. The patient places his full confidence, to the extent of his purse, health, and perhaps his life, in his dentist's integrity, knowledge, judgment and skill. Only the man who is honest at heart can go on for years making a scant living as compared with the business man, and take no advantage. The young man who chooses dentistry as his life's work must give up any idea of bartering or salesmanship as they are understood in commerce. Salesmanship implies an exchange of commodities in which sense the dentist has nothing to sell. If a dentist is thinking of his rewards before his service, then he is not practising a profession but is in commerce. Honesty which is bred of unselfishness, is the dentist's greatest asset.



## Government Grants for the R.C.D.S.

During the regime of the Drury Government in Ontario the Royal College of Dental Surgeons received in all \$163,000 in grants chiefly for expenditure on capital account. This year the College made application for \$35,000 with the hope that funds would be available to increase the efficiency of the teaching in undergraduate, graduate and post graduate work, as well as in dental research. The Ferguson administration refused the grant. By former investments there is a large plant provided and with a much reduced attendance teaching is expensive. As in other educational matters there should be a stable income because projects are not completed short of decades. There is an awful difference between \$35,000 and nothing at all. If the Government reduced the grants to the University by \$35,000 or even \$15,000, it would not all come out of one faculty, and therefore would not strike one department so hard. The dental college will have to finance its own affairs until it can make some stable basis of income. Nothing of permanent value in education or research can be developed on an in and out system of financing.

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Dr. Harry Campbell and Sir Harry Baldwin, C.V.O., M.R.C.S., L.D.S., have been respectively elected Chairman and Vice-Chairman of the Food Education Society, 329, Vauxhall Bridge Road, S.W.1.

There was a special meeting of the Board of Directors of the Royal College of Dental Surgeons on March 18th to consider a letter which had been circulated among some of the dentists of Toronto district. A committee of the Board was appointed to consider the wisdom of the school of Dentistry becoming a faculty of the University of Toronto.

Readers of the Dominion Dental Journal will no doubt expect to see in its columns a report of the discoveries of Dr. Box as reported by the Honorable Dr. Godfrey, Minister of Health. The only safe way to take part in the discussion is to ask those who wish to get the latest information on the matter to attend the meeting of the Ontario Dental Association in Toronto, May 26th, when Dr. Box and his associates will present the subject.



## Correspondence

Winnipeg Gen. Hospital,  
Winnipeg, Man.  
Feb'y. 21, '24.

My Dear Dr. Webster:

Very often since coming here I have thought of sending you summaries of cases coming under my observation, but at each time some interference caused a temporary delay. Now, the cases treated are so many that it is difficult to select one from among the number. During a year's term in an hospital one encounters many of the numerous ills to which flesh is heir, and such was our privilege.

In many of the treated cases the oral septic condition was of such a degree that it might, without qualification, be termed "deplorable", and the association with the general condition very marked. Just last week I extracted septic teeth from a patient suffering from a severe attack of bronchiectasis—my first experience with this particular form of chest lesion. Later, when discussing the case with the medical consultant he stated that not only was the condition of the teeth a present exciting cause, but also a very possible primary cause of trouble.

Arthritis in various forms is a very common ailment. We extract septic teeth from a very large percentage of patients afflicted. When secondary foci are evident the problem of restoring a normal condition is very difficult even after primary foci are removed. However, we have had cases that cleared up beautifully with simple extraction of septic teeth. Tonsils are usually removed at the same time so it is difficult to estimate how much of the trouble was due to the teeth. The bacterial findings at the apices of roots are frequently studied, but in no series have we found any particular bacterium which might be specific.

In some types of skin lesions a marked improvement is shown by removal of oral sepsis. Autogenous vaccines are sometimes made from these teeth.

Septic teeth are also found associated with cardiac conditions. It is rather difficult to extract for these patients—and sad to relate we only hope to arrest rather than cure.

Several cases of anemia have passed through our department. A septic gum condition always seems to accompany the pernicious type. One case only of leukemia came under

our notice. The latter proved very interesting because in order to stop the hemorrhage from an extracted tooth I applied pressure steadily from 6.40 p.m. to 9.45 p.m. Maybe I didn't have finger-cramp, but the reward was worth the toil as the hemorrhage ceased.—A. S. Mackenzie, B.A., D.D.S.

## A Case of Abscess of the Brain

Mrs. X.

Left Mandibular injection for dental work on May 31. Followed by pain and swelling of soft tissues about angle of mandible.

Slight temperature—100.3

Admitted to hospital June 12. Temp. 105 Leucocyte count 17000. Patient very miserable—subsequent spontaneous discharge of pus from angle of mandible—exterior aspect.

Temp. dropped to normal but immediately rose and remained hectic—marked Urticaria.

June 15/22. Sinus opened and region of zygoma explored.

June 19 Temp. normal.

June 22 Patient discharged with but slight swelling.

June 28 Readmitted—patient drowsy—pain in region of left eye. Paralysis of right side.

June 30 Patient deeply unconscious. Operation—trephining—abscess in anterior end of temporo-sphenoidal lobe.

Aug. 24 Patient died. From June 30 until death no improvements in condition of patient.

Post-Mortem findings:—Route of infection traced to exterior trouble in connection with mandible.

## A Dental Service for Readers of The Dominion Dental Journal

Under this heading questions will be answered covering any problem in dental practice from getting a location to making a diagnosis.

Dear Dr. Webster,—On Monday I had eighteen patients for extractions and of that number four fainted,—all women, while without exception the others showed heart disturbances and invariably complained of “fluttering” of the heart.



I am using the most careful technic I know in my local injections. I made a fresh solution of 2 per cent. Novocain ("E" Tablets) for each patient and used Normal Saline solution made from water distilled that day. I inject very slowly.

In view of the fact I've had so many patients collapse, I was wondering if you could advise me as to any method of controlling this.

I "think" my patients have confidence in me and hate to put their antics down to lack of it.

### *Reply*

Novocain does not show such a high toxicity as your cases indicate. Your results would make one suspicious that either the novocain you are using is not pure drug or there is some error in its strength. It might be well to get some samples from a different manufacturer because there is too much danger in having such evidence of toxicity.

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## Obituary

Dr. Andrew F. McAvenney, whose death took place on Tuesday, should be long remembered with gratitude by the people of New Brunswick and particularly by the residents of St. John, because of the large share he took in promoting and carrying on the crusade against tuberculosis. It was as the result of his agitation that the County Hospital was erected in East St. John. In addition, Dr. McAvenney was deeply interested in the Jordan Memorial Sanitorium at River Glade, Westmoreland, and was a hard working member of the managing board of that institution, from the beginning to the time of his death. He was very active in affairs of the Dental Association and throughout his life took a great interest in matters pertaining to the association. At one time he was president. He was also past president of the Council of Dental Surgeons of New Brunswick. He was one of the instigators of the New Brunswick Dental Act which was passed in 1890. His reputation was dominion-wide and was recognized by his appointment as presiding examiner for New Brunswick of the Dominion Dental Council, which office he held up to his death. In this capacity he had much to do with the registration of dentists.

Dr. McAvenney, who was born in St. John on Nov. 6, 1844, was the son of Francis and Ellen McAvenney. After his education in St. John he attended Holy Cross College, Worcester, Mass., and St. Mary's College, Montreal. Having decided to study dentistry he went to Philadelphia Dental College, where he was graduated in 1867. Returning to St. John he started in the practice of his profession and became one of the best known dentists in the province. He retired a few years ago. In 1882 Dr. McAvenney was married to Miss Mary E. Watters, daughter of Hon. Charles Watters, first County Court Judge in St. John, and is survived by one daughter, Miss Helen, and one sister, Miss Margaret.

In politics, Dr. McAvenney was a pronounced Liberal and was keenly interested in elections in his early days. Few men in St. John paid as much attention to, or were so well informed on, the Irish question during its many phases in the last fifty years.

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By

**JOHN JACOB POSNER, D. D. S.,  
New York City, N.Y.**

(The Dental Cosmos—August, 1923)

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# Dominion Dental Journal

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Vol. XXXVI.

TORONTO, MAY, 1924

No. 5

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## What Has the Patient a Right to Expect of the Dentist?

*R. D. Thornton, D.D.S., L.D.S., Richmond.*

There are two main reasons for the selection of this subject for this evening's paper. In the first place it seems very desirable to keep this thought prominently before our minds. Secondly, it appears to be a very good opportunity to acquaint the members of the Richmond Dental Society with the training that is given our undergraduate students in the School of Dentistry of the Medical College of Virginia. This is an important feature because the undergraduate of today is the graduate practitioner of tomorrow and, if the undergraduate training is not acceptable to the practitioners throughout the State, then, the teaching Faculty in the School of Dentistry would appreciate a full and detailed discussion of their shortcomings.

You will note that the subject has been worded, "What has the Patient a *Right* to Expect of the Dentist." This might have been headed, "The Dentist's Obligations to his Patients," or some similar title, but it is the desire of the writer to give the patient the place of honor this evening. The members of the Society are, therefore, invited to "step out of their characters" as dentists for a few minutes and think as the patient has a right to think regarding dental treatment.

There may be some members present tonight who look back upon the dental treatment they personally received previous to the time they took up the study of dentistry and who feel some resentment towards the profession of that day because so little instruction was given them regarding the future care of their health. It seems very essential that the operator should occasionally place himself in the position of the patient in order to retain a sane, sound course in the decisions which he makes for his patients.

The reasons which cause the public to seek dental treatment may be divided into four classes as follows:

- (a) Pain;
- (b) Personal knowledge of dental disturbances;
- (c) Referred by physician because of systemic disturbances;
- (d) Established practice of regular visits.

A brief survey of the classes of patients who come under these different headings may be helpful.

(a) Pain. Patients who come under the first class are usually in dire need of some education regarding the care of their mouths. The presence of pain is usually an indication that some pathologic condition has become acute consequently it is too late for the dentist to render the patient his most valuable service. Such patients usually request to have the pain relieved and as soon as this is accomplished are willing to leave the office, happy in the thought that they are through with the dentist until some similar trouble arises at some indeterminate date in the far-distant future. They, apparently, give no thought to what will be the ultimate result of such a course.

(b) Personal knowledge of dental disturbances. Patients who come under this class usually take a little more interest in the care of their mouths than the former class. They may not wait until disturbed by pains but usually wait until they themselves are able to discover some dental trouble. A rough margin, impaction of food between certain teeth, response to thermal changes or to percussion, discoloration of anterior teeth or large spaces, particularly in the incisor or cuspid region, are frequently their reason for arranging an appointment with the dentist. In most of these cases, the cause of their visit has progressed to a stage where much greater destruction of tissue has taken place than should be permitted. Patients of this class can usually be shown the error of their method and induced to accept regular care in the future. It is often advisable for the dentist to show some interest in their case about the time they should return for examination. Otherwise, they may forget their good intentions regarding their oral hygiene, but a slight reminder may be sufficient encouragement for them to return.

(c) Referred by physician because of systemic disturbances. This class of patients may be the victims of too much or too little dental treatment in the past. The focal infection theory caught the dental profession of the United States and Canada at a time when attention was centred chiefly upon our ability to restore lost or broken down tooth



tissue by building upon natural teeth or parts of teeth. The esthetic effect and the security of the restoration in the patient's mouth coupled with the greatest possible reduction in the bulk of foreign material introduced in the restoration were the prime factors in restorations of that day. Emphasis was placed upon the greater masticating efficiency of restorations rigidly attached to natural abutments as compared with full or partial dentures carried upon the mucosa. Consequently, many patients are today wearing dental restorations, built upon natural abutments which were positively septic at the time the restorations were made. Many vital pulps were ruthlessly destroyed in order to provide for the insertion of a post so there might be less likelihood of the artificial appliance coming loose. Some very good dentists argued that it was usually necessary to remove the pulp from a vital tooth in order to grind down the crown sufficiently to get a shell crown properly adapted at the neck of the tooth. Two lessons should be learned from these cases. In the first place, the very fact that many crowns, bridges, etc., have been carried by these patients for a number of years and have given good service in mastication and in appearance, should force us to think twice before eradicating all pulpless teeth merely for the offence of being pulpless. In the second place, the fact that many of these patients have eventually fallen victims to some disease that has its origin in infection, should cause us to weigh carefully the evidence pro and con before deciding what our treatment for pulpless teeth or those with exposed pulps, should be.

This class of patients is easily educated in matters pertaining to oral hygiene. They have already learned the far-reaching effects of dental disturbances upon the general system. It may be too late for them to benefit personally by dental instruction but many of them will be found to be the parents or guardians of young children and exceedingly anxious to see that their wards do not suffer from the same kind of neglect or ignorance that has caused their own trouble.

(d) Established practice of regular visits. Patients who come under this class form a very desirable clientele. The practice of making regular visits to the dentist at stated intervals of time makes possible the best kind of team work between patient and dentist in the practice of preventive dentistry. They are entitled to the most careful oral examination possible. The presence or absence of caries should not affect the thoroughness that is displayed in the search for

changing conditions in the mouth. Such examinations cannot attain their greatest value to the patients unless complete records are carefully made and compared each time with the records of preceding visits. More will be said later on regarding what constitutes a complete record. It seems sufficient at this time to say that it is just as essential to record the conditions in the individuals habits of living which make for immunity to dental lesions as it is to record the conditions under which we find susceptibility. The pathologic can only be understood by a thorough knowledge of the physiologic and what seems to be normal for one person may not be normal for another member of the same family.

It seems necessary at this time to mention a fifth class who really do not come within the scope of this paper if we adhere strictly to the generally accepted meaning of the word "patient," but who have, nevertheless, a *decided right* to expect certain things of the dentist. This included that great class, larger in numbers than the sum total of the four preceding classes, who have not yet learned to appreciate the importance of clean, healthy oral conditions or, if they have learned to appreciate them, are not in a position, financially, or otherwise, to avail themselves of dental services. The State Board of Health has made a very excellent move toward the care of the children in the schools. The general policy as expressed by the Health Commissioner, Dr. Ennion G. Williams, in the Handbook of Virginia, issued by the Department of Agriculture, that "people who cannot be forced to help themselves may frequently be persuaded to become health enthusiasts," seems a very desirable policy. The Health Commissioner states, however, that this health effort is yet "virtually in its infancy." This would seem to be borne out by the statement of the Director of Mouth Hygiene, Dr. N. Talley Ballou, that in the ten months ending August 31, 1923, --21,367 children had been examined but only 9,048 had been treated. The report does not so state, but many of the others may have been cared for privately. The net cost to the state was \$6,643.31.

During the year 1922, "sixty-nine new high school buildings were constructed at a cost of about \$3,750,000.00. Additions were made to thirty-six other high school buildings at an approximate cost of \$350,000.00. During the year, beginning September, 1922, the estimated expenditure for building new high schools and making additions to old ones was \$4,225,000 or a total of a little over eight and a quarter



million dollars for high school buildings in two years. In the recognized high schools last year there were 41,188 students. No doubt, all this expenditure on building account is very necessary and desirable but buildings are of but little avail if the physical condition of the students is below par.

The Health Commissioner further states that if a county *wishes* to have a full-time organization, a sanitary officer, a public health nurse, an infant welfare nurse, a school nurse or a dental clinic, the State Board of Health is willing to assist along certain well-directed plans. This implies that the people of that county must by some means acquire an appreciation of these services. This savors of the "Survival of the Fittest" theory. If dental care is advantageous to the child, then, those counties, which have decided to give their children the benefit of it, are outstripping their neighbors in the struggle for existence and the weaker ones are permitted to drop by the way. At the time of Dr. Ballou's report, September 1, 1923, only twenty-three of the one hundred counties in the State had taken advantage of these clinics. The county nurses are bringing children to the Infirmary of the School of Dentistry from some of our neighboring counties because, they state, they are unable to persuade the county authorities to provide necessary funds to establish a clinic. In marked contrast to the theory in Science, afore-mentioned comes the scriptural admonition "Be watchful, and strengthen the things which remain, that are ready to die." Rev. 3:2. This is a principle of Christianity which the dental profession cannot readily afford to ignore.

At present, the Board of Health is depending upon the public school teachers to give the necessary instruction to the public and by 1925 it will be obligatory on all teachers to be able to make ordinary physical inspection of school children to determine difficulties with vision or hearing, tooth troubles and weight variations. The State program is a very commendable one but what weight has a physical examination made by a school teacher with a parent who doesn't want to be disturbed in his regular routine? The child belongs to him and he will do as he pleases about caring for his health. That seems to have been the argument ever since public health service began. Dr. A. E. Webster of Toronto states that "the truant, the incorrigible, the criminal, the epileptic and the lunatic might very rightly charge those who cared for them during these years (childhood) for their misfortune." He might very rightly have added to these groups, those



victims of intemperate appetites. Inability to get the required nourishment out of one's food because of faulty masticatory apparatus, may easily produce a desire for strong stimulants.

And perhaps it might be very truthfully said, that those who cared for these unfortunate children are less to blame than those who did not care for them. In many cases, those who cared for them, did so to the best of their knowledge and ability. But human knowledge is limited. Therefore, it behooves those who possess knowledge which is of vital interest to the community, to disseminate that knowledge for the benefit of those who need it. It is in this way that the large number of people who receive no regular dental attention have a perfect right to expect some help from the dental profession. A brief perusal of the Bulletin of Virginia State Dental Association impresses one with certain facts which augur well for the future progress of Dentistry in the State. The law shows its interest in the dental welfare of its subjects by stipulating that there must be a dentist on the State Board of Health. Several large industrial plants provide their employees with part-time or full-time dental service. Numerous hospitals and other State Institutions are provided with dental service and the State Dental Society possesses a Mouth Hygiene Committee. It is quite impossible for a few members of a committee or a couple of State officers to accomplish all that should be done. The united efforts of the entire profession are needed. There is nothing that convinces people so readily as statements of facts. The State Society reports that there are 730 dentists registered in Virginia. The total population of the State, by the 1920 census figures is 2,309,187, making a ratio of one dentist to every 3,163 people. If these people were all educated to consult a dentist *annually*, it would mean that each dentist would be required to finish about twelve patients per day. It seems necessary, therefore, to induce our young men and women to enter the dental profession in order to help in this gigantic task of disseminating knowledge among the laity and then to cope with the demand for dental services which is sure to follow any such educational program. In the public schools of Virginia there are 562,998 children. A rapid survey of these could be made by the dental profession in a very short period of time and the publication of a report based upon this inspection would certainly give a great impetus to the spread of dental service throughout the State and would greatly aid the county nurses who are struggling heroically against great

odds, in many cases, to promote better living conditions in some of the oldest and most prosperous counties of the State.

As long as the dental profession is content to fill cavities, extract teeth and make dentures it is not entitled to the exalted status of a profession. It is merely a trade. True, it is a trade which requires considerable skill, but many other trades require just as much skill. However, dental operations may be performed so that they are merely mechanical or, so that they are worthy of being called professional in the highest sense of the term. The Century Dictionary defines a trade as follows: "A trade is specifically the craft or business which a person has learned and which he carries on as a means of livelihood or for profit, particularly mechanical or mercantile employment; a handicraft, as distinguished from one of the liberal arts or the learned professions." The same authority defines a profession as "A vocation in which professed knowledge of some department of science or of learning is used by its practical application to the affairs of others, either in advising, guiding, or teaching them, or in serving their interests or welfare in the practice of an art founded on it. It involves professed attainments in special knowledge in contrast with mere skill, a practical dealing with affairs in contrast with mere study or investigation, and an application of such knowledge to uses for others as a vocation in contrast to its pursuit for one's own purposes."

Filling teeth does not eradicate the cause of dental caries and yet it seems very difficult to get dental students to look in the mouth for causes. Their whole attention is centred upon effects. That is perhaps quite natural because the profession has grown up in the practice of examining for caries, periodontoclasia and spaces where artificial appliances may be inserted. But surely the patient is entitled to more consideration than this. If the dental profession is to apply its "professed knowledge" of a certain department of science to the affairs of others, it should do so by "advising, guiding and teaching" them how to avoid the ravages of dental lesions. The previously quoted definitions indicate a liberal training in science for the professional man and one of the chief objects of the study of a science is the training of the student to make accurate observations and arrive at logical deductions from the phenomena he has observed. In an address before the American Institute of Dental Teachers assembled in Montreal in 1922, Sir Robert Falconer, President of the University of Toronto, stated that "the inaccuracies of observations are



notorious. Certainly, success in medicine, just as in dentistry, depends on accuracy of observation, and the training of the scientific mind is partly at least the training to see, to know what to look for, and to be sure that you have found what is there. That is really the basis of diagnosis, and if diagnosis is necessary in surgery and in the practice of medicine, it is surely becoming increasingly necessary in dentistry also, a diagnosis which leads you back to causes." The education of the dentist should, therefore, fit him to observe the earliest departures in the human mouth from the normal or physiologic, to decide what will eventually happen if those conditions are permitted to continue, devise methods for their removal and to promote the re-establishment and maintenance of the normal.

It is impossible to remember all of these factors for every patient, therefore, they should be recorded on the patient's history chart and used for comparison each time the patient returns for examination.

The human teeth were undoubtedly intended to last their possessor throughout his natural lifetime just as well as the teeth of lower animals serve them efficiently during their allotted time on earth. Recent experiments carried on in research laboratories with different animals would seem to indicate that they are just as susceptible to the luxuries of advanced civilization as human beings are. Therefore, the dental problem seems to be a problem of observing the effects of civilization upon the human dentition; the removal of the causes of these disturbances or, in lieu of that, the application of some antidotal treatment.

*(To be Continued)*

## The Contact Point

*W. L. Hugill, D.D.S., L.D.S., Toronto.*

*Read Before the 1921 Club.*

In bringing this subject before you it is my desire to show the relation the lack of proper contact bears to the beginning of Peridental disease and also to suggest some methods which might act as a preventive.

In recent months the profession has benefited in no little measure through the discovery of what traumatic occlusion is doing toward the producing of Peridental disease and loss of teeth but we should not lose sight of what loss and absence of improper contacts are contributing toward the modern day disease, so for this reason I have been prompted to present this subject for your discussion.

Our knowledge of the physiological functions of the peridental membrane and especially its relation to the cementum is of greatest importance in determining the treatment. It should convince us that we will never combat this disease successfully on any other plan than that of preventive treatment. Therefore treatment must be instituted before the detachment has occurred and if it be applied thus early then those inflammations which precede detachment must be recognized and correct those conditions of the hard tissues which are liable to cause these inflammations.

That the injuries to the interproximal gum septum constitute the beginnings of the very large majority, probably three-fourths, of cases of peridental inflammations can be attributed to Dr. Arthur D. Black after having compiled careful records and that ninety-five per cent. of all persons applying regularly for dental service have present in their mouths in some location, one or more contacts that are not right which are causing inflammation of the interproximal soft tissue later involving the peridental membrane.

*Improper Contacts May be Classified as Follows:*

1. Lack of Contact—due to

- (a) Separation of two teeth on account of extraction of a neighboring tooth.
- (b) Sole disturbance in the occlusion.
- (c) Failure of dentists to build filling or restoration to proper contour.

All of which will allow food to be crowded between teeth causing injury and inflammation of the Peridental membrane with one exception where there is considerable spacing the food is not held and no inflammation results.



## 2. Improper Contact of the teeth due to

- (a) Too broad contact of two teeth due to malposition of two typical forms of teeth.
- (b) Contacts worn flat through bucco-lingual motion of teeth in their sockets.
- (c) Filling or restoration with a flat or rough surface, in contact with a proximal tooth.
- (d) Another type in which the teeth primarily are in proper contact but owing to a laxity of the peridental membrane one or both do not remain in contact under the force of mastication. This condition is more often present between the 2nd and 3rd molars, the third moving distally leaving a space for food to be crowded down resulting in peridental inflammation.

After food impaction has continued for some time, the septum will undergo absorption, there being no limit to the extent of the absorption, the entire septal tissue may be destroyed, as may also the peridental membrane and the interproximal alveolar process.

### *Procedures in Building and Maintaining Proper Contacts.*

1. When there is too broad a contact of a filling a separator should be placed and the fillings trimmed to proper form.

2. If there are proximal fillings which do not make contact, but are otherwise good, cavities may often be cut in such fillings and they may be built to proper form.

3. Proximal fillings which cannot be brought to proper form by either of the above methods should be removed and replaced whether they be good fillings or otherwise.

4. It should be remembered that two or more contacts may often be tightened by the use of the separator and the building of one proper contact.

5. In placing proximal gold fillings in practically every case slight separation should be secured; preferably a mechanical separator should be used at the time of the operation in order to gain space for the trimming and polishing of the contact.

6. In placing proximal amalgam fillings a matrix and a separator must both be used when the filling is placed, and the separator must be again applied when the filling is polished at a subsequent sitting if a proper contact is to be obtained.

7. Care should be taken to have no excess of any filling or restoration at the gingival margin. An excess not only

causes inflammation of the soft tissues but weakens the support of the crest of the septum.

8. Black recommends the radical treatment that where there is a slight opening of the contact between two teeth which present neither fillings nor cavities in their proximal surfaces, a cavity should be cut in one of these teeth and a filling be placed to make a proper contact.

9. In a limited number of cases in which contacts cannot be maintained owing to the continued movement of one or both teeth it will occasionally be best treatment to extract one tooth to save others. This condition most frequently presents between the upper second and third molars, due to the third molar moving distally, or being sufficiently loose in its socket to permit movement under pressure.

10. The proper position of the contact point for the bicuspid teeth and molar teeth is just a little to the gingival of the marginal ridges, approximately 1 to 2 millimeters, the convexity of both surfaces at this point should generally change to a slight concavity in the gingival direction. If the contact is placed too far occlusally it forms such a large space below that we cannot expect the gum septum to fill unless it extended beyond its normal length. As a consequence less food in masticating will pass through the embrasures and the teeth will not be normally cleaned in mastication. If the contact point be placed too far gingivally it results in the formation of a V-shaped space where food is forced and packed in during mastication resulting in the opening of the contact and later periodontal trouble. (Worn teeth: age wear. Contact is then kept high.)

#### *Methods of Separation.*

The separation of teeth is a procedure which calls for considerable care to avoid injury to the periodontal membrane. In children and young people the necessary space is gained much more quickly with less irritation than when the alveolar walls have become firm and compact. A certain amount of space is always gained even in a full arch by the closing of the slight spaces which often exist between teeth. It is therefore important that force applied and materials or appliance used should be adapted to conditions present.

#### *Immediate or Direct Method of Separation.*

Applicable:

(1) In examination for carious cavities.

(2) Preparatory to slower wedging and temporary stopping.



(3) For holding space already gained and gaining extra space to facilitate insertion of filling material and to allow a little extra prominence at the contact point which is later polished off in polishing—both for amalgam and gold foil fillings.

(4) To gain space to aid final polishing of filling—for introduction of strips and disks in all proximal fillings.

(5) To facilitate preparation of proximal cavities because I believe faulty cavity preparation to be probably the commonest fault of dentistry.

*Direct Separation Accomplished By:*

(1) Wooden wedges of hard wood preferably orange wood.

(2) By the use of the mechanical separator the best of which I believe to be the Derby Perry. I believe sufficient justification for this statement is that fifteen out of forty American Dental Colleges have this instrument on their prescribed list of College instruments and every college which demands a particular set or make of all instruments in their equipment prescribe the Perry Separator.

*The Requirements of a Good Separator*

which are more nearly found in the Perry Separator are as follows:

(1) The points of pressure must be aside and far away from the median line of the proximal surface otherwise they will intrude upon the field of operation or if carried too far rootward will press dangerously on the interproximal tissue.

(2) The pressure having to be well aside from the median line, it should be upon both sides equally.

(3) As the separating applies to both teeth there should necessarily be four points of pressure at regular distances.

(4) The points should be far enough over the crown so that their tendency under pressure will be to move rootward, otherwise they would likely slip off, but they must at the same time be stayed to prevent their going too far, causing impingement on the septal tissues.

(5) The four points make necessary two bars each with a left and right hand screw through which force may be exerted equally in both directions.

Mechanical separators cannot be used in all locations and in many cases settling into the septal tissues can be overcome by first placing gutta percha under the working point or an orange wood stick under the bars resting on the occlusal surfaces of the teeth.

*Gradual or Indirect Method of Separation.*

Accomplished by:

(1) Insertion of cotton tied around by ligature at the contact point which is most effective of all gradual methods for anterior six teeth.

(2) Placing of base plate gutta percha so that the bite or teeth in occlusion will gradually drive it down at the same time exposing the gingival margin of the cavity employed for separating the posteriors. The effect will be increased if it be inserted first under slight separation of the mechanical separator.

(3) The use of rubber gives results but has been found to give great annoyance to patients.

*Comparison of Direct and Indirect Methods.*

Wherever possible I prefer to depend on the direct method for separation for fear of inflicting permanent injury to the surrounding tissues, the pericemental membrane, the interproximal alveolar wall and the overlying gums, if done by the gradual method extending over some time. All these tissues will endure a certain amount of pressure temporarily and return to their normal positions unharmed when pressure is removed but should never be applied longer than absolutely necessary. It involves primarily the question of blood supply, a diminution here and an increase there or part anaemic and the other congested of the tissues surrounding the root. If continued pressure absorption begins, hence my belief for immediate separation where it is possible to employ it and also where indirect method is employed not to keep separating medium in place longer than will give the necessary requirements.

*Finishing of Filling and the Contact Point. (e.g. amalgam)*

This operation should always be done with a separation applied and by means of files and sickle shaped knives to trim and gingival margin and carborundum stones, sandpaper and cuttlefish, disks applied on the walls all around the contact point. This will polish smoothly your filling and finally before removal of the separator a strip passed several times over the contact point will give the desired result here. Finally by use of moose hide wheels first with pumice followed by whiting a brilliant polish can be obtained.

*Testing Contact Points.*

If the contact point is not sufficiently tight, the ligature will of course pass through easily requiring little force. If the surface of either tooth is rough or if a filling is not pro-



perly finished the ligature will be frayed or cut; if the contact is too broad it will drag as if forced through. In testing contacts the ligature should be passed through under the contact point and the two ends of the ligature held parallel in the direction of the long axis of the tooth. The distance between the parallel strands indicate the bucco-lingual width of contact. Then hold the two ends at right angles to the long axis of the tooth to determine the occluso-gingival width of contact. In either direction the parallel strands should not exceed one to two millimeters.

Summing up I would conclude that the proper treatment of all the cases is the establishment of conditions by which the continued irritation of the interproximal gum tissue will be prevented. This means that we must maintain proper contacts, that we must maintain the full mesio distal width of the interproximal space. The importance of preserving the full width of this space does not seem to be fully appreciated. Observation will show that there is normally a definite mesio-distal width of this space in relation to the length of the gum septum. So this space must be of normal width to give proper support to the crest which is to withstand the pressure of food passing through the embrasures. When all of these conditions are given careful consideration one cannot fail to be impressed with the fact that the large number of cases presenting in which previous filling operations must be removed, or in which conditions calling for treatment to protect the gum septum have been neglected is a bad reflection on our work as professional men; to the operator who inserts them and also the specialist who so frequently neglects their correction in the treatment of periodontal disease.

## Gingivitis

*S. S. Crouch, D.D.S., Toronto*

*Read Before the 1921 Club, Toronto.*

The proper study of that disease which has its beginning in the Gingival margins of the gums would require far more time and ability than are at my disposal. In view of this, I shall endeavour to present some of the important, but too often neglected, phases of the earlier stages of the disease commonly called Gingivitis. For much of the matter presented I am indebted to the writing of Black, Hartzell, Bunting, Box and others.

Gingivitis may be defined as an inflammation to the free margin of the gums without affection of the pericementum or at least without the loss of its attachment to bone or tooth. When this latter occurs we have the condition now known as *Periclasia*.

It is my opinion, shared by several dentists whom I have consulted, that our Dental Colleges are not giving adequate attention to disease of the peridental tissues. Especially are they lacking in teaching the diagnosis and treatment in a practical way, of the incipient stages of the disease. As a consequence many dentists neglect conditions which are dangerous to the life of the teeth.

Of all the mucous coverings of the mouth, the gingivae are most vulnerable to the attack of infectious organisms. Prominent authorities claim that gingivitis is present in 95% of all mouths with teeth present, and that it is far more common than caries. It is an established fact that more teeth are lost through peridental disease than through caries. As dentists we are far too prone to see the cavities and spaces to fill with bridgework, and to neglect the gingivae, to the detriment of the latter and too often to final loss of the teeth. Prevention of future trouble and loss should assume *first place* in our College Curricula as well as in all Dental offices.

The etiology of *Periclasia* has been an obscure problem to many men in the past. Many have believed that the cause of the disease was in the general system; many other that it was of purely local origin. The consensus of opinion today, especially in America, is that it is caused locally but that certain general conditions often aggravate the disease.

I believe with Hartzell that you cannot have a continued gingivitis or *periclasia* without bacterial growth. This, then, is the first and outstanding cause of the disease.



Noguchi of the Rockefeller Institute, Seguin of the Pasteur Institute, Hartzell and others believe that the local tissues are destroyed by a specific type of organism. The streptococcol group of bacteria being, most likely, directly responsible. The dangerous growths on the necks of teeth consist chiefly of *Strep. veridens*, *Staphylococci* and *pneumococci*.

Other contributing causes of Gingivitis may be briefly stated.

(1) Malocclusion or traumatic occlusion, the latter very common and often unrecognized and therefore neglected.

(2) Faulty Diet which has been shown by laboratory experiment, to have created conditions that lead to severe bacterial invasions.

(3) Deposits of calculus cause gingivitis by direct irritation and by holding bacteria in contact with tissues. Black has shown that control of these deposits is largely or altogether a question of diet; over-ingestion of food being the commonest cause.

(4) Injuries brought about by faulty contact points or lack of contact causing chronic injury to septal gingivae.

(5) Lack of proper tooth contour, allowing food etc., to come into contact with free margins of the gingivae instead of being deflected over this on to the hard gum.

(6) Abuse of the gingivae by dentists in placing fillings, or in finishing them.

(7) Abuse by patients with tooth picks, floss silk, and the wrong use of tooth brush.

(8) Accidental injuries.

(9) Lack of cleanliness which encourages bacterial growth in any field.

All of these are contributing causes because they reduce the vitality of the tissues and thus permit bacterial invasion.

(10) Circulatory poisons such as lead and mercury and a possible constitutional origin as still believed by some European investigators. There is no doubt that the general condition has a local effect, but I believe it simply reduces the resistance of the local tissues, making them more susceptible, or aggravating the condition already locally caused.

The symptoms of Gingivitis vary according to: (a) the underlying predisposing and contributing causes, (b) to the local reaction of the tissues, (c) the degree and duration of

the injury, and (d) the general constitutional condition of the patient.

The most prominent characteristic is perhaps the inflammatory reaction by which the tissues oppose the bacterial invasion. When the local reactive powers are high we have hypertrophy of the tissues, thickened, dark red in color and strongly resistant to the invading organisms. If the reactive powers are low; there is rapid destruction, recession of the gingivae; and involvement of pericementum follows very soon.

The type and severity of the disease may be determined by the local symptoms and disease manifestations, associated with the state of general health of the patient. Systemic diseases such as Syphilis, Tuberculosis, Arthritis, Diabetes and intestinal intoxication act as predisposing causes and should be taken note of among the symptoms.

Locally we may find changes occurring in the color, form and density of the gingivae.

Normal gum is uniform in color, being lighter or darker according to the hemoglobin content of the blood. Any deviation from that uniform color should be taken as evidence of circulatory derangement and consequent loss of tone and of resistance to injury. A close examination will generally show some irritant directly causing this change from the normal color, whether chemical, bacterial, or mechanical. Upon its removal there will be rapid recovery in every case where resistance to injury is normal. A red tissue shows strong protective reaction while pale or blue coloring evidences low resistance, and consequently, poor recuperative powers.

Changes in form consist of shrinkage or retraction of the gum line due to tooth brush abrasions, atrophy of age, low resistance, too flat contours or lack of contact points; and of swelling or hypertrophy showing a high resistive power to the irritant. Box tells us we cannot have a receded gum line without bone absorption.

Normal gum is dense, hard and resistant to mechanical injuries. Tissues which are soft, spongy and bleed easily indicate a condition of chronic inflammation or else a general systemic disturbance and are highly susceptible to bacterial invasion.

An examination of the line of attachment of the pericementum will show if the disease is limited to gingivitis. This is the case when no attachment has been lost.



Successful treatment of Gingivitis, by which I mean permanent freedom from the disease, depends upon the removal of the cause or causes of the disease and the securing of the hearty, intelligent and persistent co-operation of the patient. We must recognize that each patient presents a different problem. Therefore a careful study of each case is necessary before deciding on the treatment. Minute details cannot be given in a short paper, but our first aim should be to restore a normal condition of the oral cavity as regards bacteria, remembering that an abnormal condition of same is a primary cause.

Thorough prophylaxis is indicated, then, in order to rid the mouth of all foreign and harmful agencies. All calculi should be removed and rough enamel surfaces smoothed so that they may be easily kept clean. Particular care should be taken to avoid further injury to the tissues by instrumentation.

All overhanging portions of fillings, crowns, and bridges should be trimmed down, contact points restored, proper contours made or restored and lost teeth replaced.

Following these procedures, or possibly before some of them, traumatic occlusion should be corrected by equalizing occlusal stresses in all normal positions of the mandible. Many localized cases of gingivitis may be cleared up merely by this process of using carbon papers and judiciously grinding and polishing the points where heavy stress comes. This is one of the most important parts of treatment and if neglected full recovery cannot be expected. A whole evening might well be given to discussing this subject alone.

In some cases orthodontic interference is necessary as the crowding and bunching, or separation of the teeth may have caused a congestion of the gingivae that can be cleared up in no other way.

Suggestions to the patient as to diet are necessary and frequently beneficial, but I believe one should not look for very marked results. It is difficult in the extreme to change the diet of an individual fixed through a long term of years and complicated by varying conditions in hotels, restaurants, and boarding houses. And more difficult still to alter the habits of a whole family.

The securing of the co-operation of the patient, however, is important. This includes not only securing his willingness, but also training him to properly and regularly perform those procedures necessary to keep the tissues in a healthy condi-

tion. The purpose is to rid the oral cavity of food debris and bacterial plaques and to massage the soft tissues, in order to stimulate circulation and toughen the tissues so that they become highly resistant to mechanical injury. Dr. Box recommends the brushing of the patients teeth and gums at the chair several times as the best way of teaching the proper method. The patient sees what is done and feels the result and knows what he is aiming at. A 5% solution of Sodium Chloride in water is used to cleanse the tissues and act as a tonic. This may be used once or twice a day, and clear water or a dentifrice at other times as indicated. Some mouths require no abrasive, others, especially those with viscid saliva require a more or less coarse abrasive to keep the teeth clean, but it should not be used often or damage will result to teeth or periodental tissues.

The value of the use of dental floss by the patient is questionable. As far as I have observed more harm than good has resulted from its use. If a proper type of brush is used almost if not all exposed surfaces of teeth may be reached.

The work by the patient must be inspected and corrected if necessary until he can do it satisfactorily. Even then periodic examination and treatment of any beginning points of disease is indicated.

If the disease is recognized in its incipency and some such treatment as I have outlined, but modified to suit the individual case, followed, I am confident the teeth will be retained in the mouth indefinitely and the health and happiness of our patients increased.



## Dentistry in Great Britain

We publish in this issue a complete report of the standing of dentistry in Great Britain as delivered by Dr. William Guy, Edinburgh, at the International Dental Federation, Paris, August, 1923. This is the first time that all the data in connection with dentistry has been collected into one report. Everything either domestic or foreign is clearly set forth. It must be noted that in practice many Canadian dentists are on the British Register, but there is no statement specifically made how this occurs. It simply means that when Canadian credentials are presented they comply with the British regulations and hence the names are placed upon the register. It is better that there should be no avowal of reciprocity between Ontario or Canada and Great Britain because then each is at liberty to act on the cases on their merits as they arise without causing an affront to any nation or giving opportunities for comparisons. It is the individual who is admitted and not the product of a school, state, province or nation. Graduates of two Japanese schools are admitted to the register as well as three from Australia and several from Belgium. Some of these must surely be special dispensations. Canadians and others who think dentistry is only practised in America should read and ponder on the curriculum as presented.

The President of the Commission (Mr. William Guy) presented a report as follows:—

"Report to the Commission on Dental Education of F.D.I. (1923).

"This Report will be most conveniently given in the form of categorical answers to the questions included in the questionnaire issued by the Commission.

Q. 1.—Please state under what conditions the practice of dentistry is permitted in your country. If it is regulated by law, a copy of the enactments dealing with it will be helpful.

A.—Section I of the Dentists Act 1921 prohibits the practice of dentistry by unregistered persons. The wording of the section is:—

'1. Prohibition of practice of dentistry by unregistered persons.

(1) No person shall, unless he is registered in the Dentists' Register under the Dentists Act, 1878 (in this Act referred to as the principal Act), practise or hold himself out, whether directly or by implication, as practicing or being prepared to practise dentistry.

(2) Any person who acts in contravention of the provisions of this section shall, in respect of each offence, be liable on summary conviction to a fine not exceeding one hundred pounds.

(3) Nothing in this section shall operate to prevent:—

(a) The practice of dentistry by a registered medical practitioner; or—

(b) The extraction of a tooth by a duly registered pharmaceutical chemist or duly registered chemist and druggist, where the case is urgent and no registered medical practitioner or registered dentist is available and the operation is performed without the application of any general or local anæsthetic; or

(c) The performance in any public dental service of minor dental work by any person under the personal supervision of a registered dentist and in accordance with conditions approved by the Minister of Health after consultation with the Dental Board to be established under this Act'.

Inasmuch as there were at the date of the passing of the Act many unqualified persons engaged in the practice of dentistry as their principal means of livelihood, or in the occupation of dental mechanic, the Act, which

established the Dental Board to administer the provisions of the Act, defined the conditions under which the Board should admit such persons to the Register. These conditions are stated in Section 3 of the Act, which reads:—

'3. Right of certain persons to be admitted to the Register:—

(1) The Board shall admit to the Register kept under the principal Act:—

(a) Any person who makes an application in that behalf within the interim period and satisfies the Board that he—

(i) Is of good personal character; and

(ii) Was for any five of the seven years immediately preceding the commencement of the Act engaged as his principal means of livelihood in the practice of dentistry in the British Islands, or was admitted to membership of the Incorporated Dental Society not less than one year before the commencement of this Act; and

(iii) Had attained the age of 23 years before the commencement of this Act; and

(b) Any person who makes an application in that behalf with the interim period and satisfies the Board that he:—

(i) Is of good personal character; and

(ii) Was for any five of the seven years immediately preceding the commencement of this Act engaged as his principal means of livelihood in the occupation of a dental mechanic in the British Islands; and

(iii) Had attained the age of 23 years before the commencement of this Act; and who within ten years from that date passes the prescribed examination in dentistry.

(2) Any person who satisfies the Board that he was at the commencement of this Act engaged as his principal means of livelihood in the practice of dentistry in the British Islands, and within two years from the commencement of this Act passes the prescribed examination in dentistry, shall for the purposes of this section be treated as having been engaged for five of the seven years immediately preceding the commencement of this Act in the practice of dentistry in the British Islands as his principal means of livelihood.

(3) Any person who is a duly registered pharmaceutical chemist or duly registered chemist and druggist shall, if he proves to the satisfaction of the Board that he had immediately before the commencement of this Act a substantial practice as a dentist, and that his practice included all the usual dental operations, be treated for the purposes of this section as having been engaged for any five of the seven years immediately preceding the commencement of this Act in the practice of dentistry in the British Islands as his principal means of livelihood'.

Section 5, dealing with dental companies states that—

'(1) A body corporate may carry on the business of dentistry, if

(a) it carries on no business other than dentistry, or some business ancillary to the business of dentistry.

(b) A majority of the directors and all the operating staff are registered dentists'.

The fee for original registration is £5; for annual retention on the Register £5.

From the date of the passing of the Act (July 28, 1921) the qualification for registration is the possession of a registrable diploma. When the registration of persons admissible under Section 3 is completed, the only warrant for admission to the Register is the possession of a registrable diploma.

The applicable words are found in Section 6 of the Dentists Act, 1878.

'6. Qualification necessary for registration.

Any person who—

(a) Is a licentiate or graduate in dental surgery or dentistry of any of the medical authorities; or

(b) Is entitled as hereinafter mentioned to be registered as a foreign or colonial dentist.'

The conditions regulating the admission of foreign or colonial dentists will be stated in the answer to Q. 8.

Between July, 1921, and February, 1923, 7,420 persons secured registration under the provisions of Section 3 of the 1921 Act, and 550 persons were registered with qualifications. The Dentists' Register of the United Kingdom now contains roughly 13,000 names. Of these rather more than 5,000 possess a licence or degree in dentistry.

Q. 2.—What standard of preliminary education is required?

A.—The General Medical Council's resolutions in regard to preliminary education lay down that every student should be registered at the commencement of his studies; that before registration he should have (1) attained the age of 17 years; (2) passed an approved examination in general education;



and, in addition thereto, an examination in elementary physics and elementary chemistry, conducted or approved by one of the licensing bodies. The minimum standard of general education required is that of University matriculation, or entrance examination in the Faculties of Arts or pure Science.

Q. 3.—Is there a prescribed curriculum compulsory for all dental students? Please give detailed particulars of the curriculum, showing the nature of the courses of instruction, the duration of each course, the total duration of the curriculum, the period at which each course is taken, and the total cost of the curriculum.

A.—The recommendations of the General Medical Council as to the course of study and examination to be required of candidates for licenses in dentistry or dental surgery, which came into operation on January 1, 1923, supply the answer to the question in regard to particulars of the curriculum, the nature of the courses of instruction, the duration of each course, and the total duration of the curriculum; a copy of these recommendations is appended.

**'RECOMMENDATIONS AS TO THE COURSE OF STUDY AND EXAMINATIONS TO BE REQUIRED OF CANDIDATES FOR LICENCES IN DENTISTRY OR DENTAL SURGERY, ADOPTED BY THE GENERAL MEDICAL COUNCIL ON MAY 27, 1922. TO COME INTO OPERATION ON JANUARY 1, 1923.**

**A.—PRELIMINARY EXAMINATION AND REGISTRATION.**

(1) That every dental student shall, at the commencement of his student-ship, be registered in the manner and under the conditions prescribed for medical students.

(2) That before registration in the Dental Students' Register every applicant shall be required to have passed, in addition to the examination in general education, which shall be the same as that required for medical students, an examination in elementary physics and elementary chemistry, conducted or recognized by one of the licensing bodies, which shall also be the same as that required for medical students.

(3) That before registration as a dental student every applicant shall produce evidence that he has attained the age of seventeen years.

**B.—PROFESSIONAL STUDY.**

(4) That every candidate for a degree or licence in dentistry or dental surgery shall be required before admission to the final or qualifying examination to produce certificates showing:

(i) That he is at least twenty-one years of age.

(ii) That he has been registered as a dental student.

(iii) That he has, subsequently to the date of registration as a dental student, been engaged in professional study for at least four years, of which three at least shall be spent at a school or schools recognized for professional study by one of the licensing bodies.

(iv) That, subsequently to the date of registration as a dental student, he has attended at a recognized medical school courses of instruction, which shall be the same as those required for medical students, in the following subjects:—

(a) Chemistry, and (b) physics, in their application to medicine;

(c) Elementary biology.

*Note.*—A student who has diligently attended an approved course of elementary biology in a secondary school or other teaching institution recognized by a licensing body may be admitted to a professional examination in elementary biology immediately after his registration as a dental student.

That he has attended at a recognized medical school courses of instruction in the following subjects:—

(d) Human anatomy (with dissections and demonstrations) for three academic terms.

(e) Physiology (with laboratory instruction, including practical histology) for two academic terms.

(f) General Pathology (including bacteriology) for two academic terms.

(g) Medicine for two academic terms.

(h) Surgery for two academic terms.

(i) The practice of a recognized general hospital or hospitals of not less than eighty beds, with certified instruction in clinical medicine and clinical surgery, for four academic terms.

*Note.*—The teaching in anatomy, physiology, pathology, medicine, and surgery should take cognizance of the special needs of dental students.

The certificates of teaching at general hospitals should furnish evidence of the student having acted as medical clinical clerk and surgical dresser, and of attendance in the out-patient or casualty departments.



A certificate of clinical instruction in venereal disease should be required.

(v) That he has attended at a recognized dental school courses of instruction in the following special subjects:—

- (a) Dental anatomy and physiology, human and comparative. The course should comprise a minimum of twenty meetings of the class.
- (b) Practical dental histology and morbid histology. The course should comprise a minimum of sixteen meetings of the class.
- (c) Dental pathology and surgery. The course should comprise a minimum of twenty meetings of the class.
- (d) Dental materia medica and therapeutics. The course should comprise a minimum of sixteen meetings of the class.
- (e) Dental metallurgy (with practical work and demonstrations). The course should comprise a minimum of twenty meetings of the class.
- (f) Dental mechanics (with practical work and demonstrations). The course should comprise a minimum of twenty meetings and twenty demonstrations.
- (g) A course of instruction in the use of anæsthetics, general and local, employed in dental practice.
- (h) A course of instruction in radiology as applied to dentistry.

*Note.*—A candidate should produce a certificate of having administered general anæsthetics on at least ten occasions.

(vi) That he has for at least twenty-four calendar months attended, during the ordinary academic terms, the practice of a recognized dental hospital or of the recognized dental department of a general hospital.

(vii) That he has received for not less than twenty-four calendar months, or for 2,000 hours, practical instruction in Dental Mechanics.

*Note.*—No portion of such practical instruction which is taken prior to the date of registration shall be reckoned as a portion of the four years of professional study required.

It is recommended that instruction in dental mechanics be taken at a recognized dental hospital and school. If any part of such instruction be taken by the candidate as a pupil with a registered dentist the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school.

Where in the foregoing the expression "course" is used, it is not intended that this should be read as necessarily implying lectures only; the licensing bodies and the schools are left free to arrange their methods of instruction in the manner they find most efficient.

#### C.—PROFESSIONAL EXAMINATIONS.

(5) That the examination for a degree or licence in dentistry or dental surgery shall be partly written, partly oral, and partly practical, and shall include the following subjects:—

- (a) Chemistry, Physics, and Biology, in their bearing on medicine and dentistry.
- (b) Human Anatomy and Physiology.
- (c) General Pathology, including Bacteriology.
- (d) Medicine and Surgery.
- (e) Dental Anatomy and Physiology, Dental Pathology, Dental Surgery (including Orthodontics), Dental Materia Medica and Therapeutics, and Dental Mechanics and Dental Metallurgy.
- (f) Practical Examination in Dental Surgery.
- (g) Practical Examination in Dental Mechanics and Metallurgy.
- (h) Anæsthetics, general and local, employed in dental practice.

*Note.*—It is recommended that a synopsis of the general subjects of the professional examinations be issued by the licensing bodies.

(6) That the prescribed subjects of examination may be combined or distributed at the discretion of the licensing bodies, and may be taken at two or more successive stages during the course of professional study; provided that no candidate shall be admitted to any final examination in dental surgery and dental mechanics until he shall have completed the required four years' course of study'.

There is no stereotyped order of sequence for the various courses. The order varies slightly in different schools, but on the whole there is marked similarity in the manner of their distribution.

The main points to be noticed are that a candidate must spend at least three years at a school or schools recognized for professional study by one of the licensing bodies; two years must be spent in dental hospital practice, and two years or 2,000 hours in practical instruction in dental mechanics.

This last requirement is doubled if the instruction is taken as a pupil with a registered practitioner.

In every case four years subsequent to registration as a dental student must be spent in professional study.

The total cost of the curriculum and L.D.S. diploma also varies.

|                                                                    | £   | s. | d. |
|--------------------------------------------------------------------|-----|----|----|
| In the University of Leeds, the approximate total cost is given as | 357 | 0  | 0  |
| In Edinburgh, Professional Education and Diploma                   | 118 | 16 | 0  |
| Mechanical Instruction                                             | 63  | 0  | 0  |
| Hospital Kit of Instruments                                        | 21  | 0  | 0  |
| Books and other instruments, say                                   | 20  | 0  | 0  |
|                                                                    | 222 | 16 | 0  |
| The University of Bristol:                                         |     |    |    |
| Professional Education and Diploma                                 | 206 | 17 | 0  |
| Instruments and Books, say                                         | 41  | 0  | 0  |
|                                                                    | 246 | 17 | 0  |
| University of Manchester:                                          |     |    |    |
| Professional Education and Diploma                                 | 228 | 18 | 0  |
| Instruments and Books, say                                         | 41  | 0  | 0  |
|                                                                    | 269 | 18 | 0  |

These are merely given as examples: in London the cost would probably approximate £300, and it may be assumed that wherever undertaken in the United Kingdom the cost of the curriculum and diploma will be about that sum.

Q. 4.—What degrees and diplomas are obtainable at the end of the curriculum?

A.—The diploma of Licentiate in Dental Surgery is given by the Royal Colleges and by the Universities of Durham, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, St. Andrews, Dublin and Belfast. The above-named Universities with the exception of St. Andrews give also the Degrees of Bachelor of Dental Surgery and Master of Dental Surgery.

The University of London confers the degrees of Bachelor of Dental Surgery and Master of Surgery (dental surgery), the National University of Ireland the degrees of Bachelor and Master of Dental Surgery.

Q. 5.—Give a list of the Universities, Colleges or Corporations granting degrees or diplomas in dentistry. What is the constitution of their Examining Boards?

A.—Royal College of Surgeons of England.  
 Royal College of Surgeons of Edinburgh.  
 Royal Faculty of Physicians and Surgeons of Glasgow.  
 Royal College of Surgeons in Ireland.  
 University of Durham.  
 University of London.  
 Victoria University of Manchester.  
 University of Birmingham.  
 University of Liverpool.  
 University of Leeds.  
 University of Sheffield.  
 University of Bristol.  
 University of St. Andrews.  
 University of Dublin.  
 National University of Ireland.  
 Queen's University of Belfast.

By Section 19 of the Dentists Act, 1878, any of the Medical Authorities who have power to grant surgical degrees or diplomas may appoint a Board of Examiners to conduct examinations and grant licences in Dentistry. Each of such Boards shall be called the Board of Examiners in Dentistry or Dental Surgery, and shall consist of not less than six members, one half of whom at least shall be persons registered under this Act. Most of the Boards exceed the minimum number of six. But whatever the number may be, at least half must be registered dentists.

Q. 6.—Does the possession of a degree or licence confer the right to practice, or is there a State examination in addition?

A.—The possession of a degree or diploma does not confer the right to practice. It is the qualification of the person holding it. Not till registration is effected is the holder of a degree or licence allowed to practice. There is no State examination.

Q. 7.—If there is a State examination give particulars concerning it and state exactly what privileges are obtained by those who pass it

A.—Not applicable.

Q. 8.—Are any qualifications obtained in any other country, recognized as admitting to practice in your country? If so, which?



A.—Persons holding the following diplomas are admissible to the Dentists' Register:—

Licentiate of Dental Surgery of Victoria.

Bachelor of Dental Surgery of the University of New Zealand.

Bachelor of Dental Surgery of the University of Sydney.

Bachelor of Dental Science, Doctor of Dental Science of the University of Melbourne.

Diploma in Dentistry granted to candidates in Medicine of the Universities of Brussels, Ghent, Liège and Louvaine, after examination by a Belgian Provincial Commission.

Diploma of Doctor of Dental Surgery (Shikwa-Igakushi) of the Nippon Dental College.

Diploma of Doctor of Dental Surgery (Shikwa-Igakushi) of the Tokyo Dental College.

The General Medical Council may admit to the Register as Colonial or Foreign dentists persons not possessing a British or one of the above diplomas. Any person so applying for consideration of his qualifications must produce satisfactory evidence of identity and good character, and (1) that being a British subject (*a*) with a colonial licence or diploma he is not domiciled in the United Kingdom, or has practised for more than ten years elsewhere than in the United Kingdom; (*b*) with a foreign licence or diploma he has practised for more than ten years elsewhere than in the United Kingdom; (2) that being a foreign subject with a colonial licence or diploma, he is not domiciled in the United Kingdom, or has practised for more than ten years elsewhere than in the United Kingdom. Applications from foreign dentists with foreign diplomas are considered by the General Council and must be accompanied by full details of the course of study pursued in order to obtain the foreign licence or diploma.

Q. 9.—Is there reciprocity of recognition of qualifications between your country and any other country?

A.—Japan recognizes any qualification accepted in Great Britain, Doctors of Dental Surgery of Nippon or Tokyo are admitted to the British Register.

Q. 10.—Give as full information as possible regarding the scope and character of the professional examinations for degrees or diplomas.

A.—The character and scope of the professional examinations will be explained by a study of the Regulations for candidates issued by the Licensing Bodies. For this end the Regulations of the Royal College of Surgeons of England and of the Royal College of Surgeons of Edinburgh are submitted as representing the type, nature and scope of qualifying examinations.

*(To be continued)*

## Canadian Dental Association Convention, Vancouver, August 4-7, 1924

### *Trans-Canada Tour.*

The Transportation Committee of the C.D.A. have made final arrangements for an official Trans-Canada Special Train to leave Toronto on the 24th July, arriving at Vancouver August 2nd. This tour will travel via the Great Lakes C.N.R. to Prince Rupert. Ocean steamer to Vancouver. Returning leaves Vancouver over Main Line of C.P.R. thence Great Lakes and on to Toronto.

This excursion will be the finest that any Dental Association has ever held and with the stop-over privileges and sight-seeing advantages will be one which will be long remembered.

The return fare and lower berths both ways with the stop-over privileges for sight-seeing, two trips on the Great Lakes and one down the Pacific has been placed at the very reasonable figure of \$202.95, meals and berths on all steamers included.

Should special accommodation on Lake steamers be desired, notification should be sent to the Committee early. The advantage of sleeping in the Pullman instead of hunting an hotel will be another great advantage of travelling in a group.

Tickets will be good to Vancouver, Victoria, Seattle and Portland and an itinerary for these cities appears below.

A very pleasant scenic excursion can be taken to Skagway which will consume 9 days. This is the finest scenic trip on the continent and should be taken by every one where time can be spared. The trip including berth and meals will be \$80.00. From Skagway side trips may be made over the White Pass and Yukon railway and steamers to Atlin Lake, the West Taku Arm, White Horse, the Yukon River and Dawson. Any one contemplating this trip should notify the committee early so as to insure accommodation, as these steamers are usually crowded at this season of the year.

The itinerary of the special train follows, and it is to be hoped that any who are intending to spend their holidays Seeing Canada First, this year, will communicate early with the Committee:



*Fare and Berths to Vancouver.*

|                    | C.N.R. C.P.R.     |          |             |          |
|--------------------|-------------------|----------|-------------|----------|
|                    | Toronto Vancouver |          | Return Fare |          |
|                    | to                | to       |             |          |
|                    | Vancouver Toronto |          |             |          |
| Upper Berths ..... | \$20.90           | \$27.50. | \$143.80    | \$192.20 |
| Lower Berths ..... | 26.15             | 34.40    | 143.80      | 204.35   |
| Compartment .....  | 73.15             | 96.25    | 143.80      | 313.20   |
| Drawing Room ..... | 92.40             | 122.10   | 143.80      | 358.30   |

Berths on the return trip will be reserved at Vancouver on the beginning of the return passage.

The itinerary of the excursion will have to be complete before leaving Toronto.

Approximate fares from points East of Toronto to Vancouver will be as follows:—Halifax, \$170.45; St. John, \$165.10; Fredericton, \$163.60; Quebec, \$144.10; Montreal, \$133.85; Ottawa, \$128.05.

All of the above fares are good going via Toronto.

If lake trips are desired add \$10.00 to fare for each trip, and for boat trip from Prince Rupert to Vancouver add \$13.00, meals and berths included on all water trips.

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## Hamilton Academy of Dentistry

The Hamilton Academy of Dentistry met at dinner at the Royal Connaught hotel. There was a short business meeting at which a camera was presented to Dr. O. S. Clappison and a traveling companion to Dr. G. W. Everett, both of whom conducted study clubs during the winter. Officers were elected as follows: Dr. E. P. Moore, president; Dr. J. E. Johnston, vice-president; Dr. O. S. Clappison, past president; Dr. A. R. Poag, treasurer, and Dr. H. L. Field, secretary. After the business was disposed of the academy was addressed by Dr. Harold Clark and Dr. Harry Thompson both of Toronto.

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## Ontario Dental Association, May 26, 27, 28, 29, 1924

The program committee of the Ontario Dental Association has left no stone unturned to make its coming meeting a great success. It has two former Canadians as outstanding speakers. None will be more welcome than the dentists' old friend, Dr. C. N. Johnson, and few will have forgotten the smiling face and musical voice of Don. M. Gallie. A welcome is extended to every dentist to join with his confreres in making the Ontario meeting the equal of any.

## Correspondence

Dear Dr. Webster,—I have a case on which I would like some advice.

Patient, a boy eleven years old, general condition excellent, all teeth good with the exception of two lower central incisors. The incisal third of both these teeth is broken off, pulps not exposed, no pain with the exception of a slight soreness around the roots periodically. One broke off about two years ago while eating, the other about two weeks ago for no apparent reason whatever.

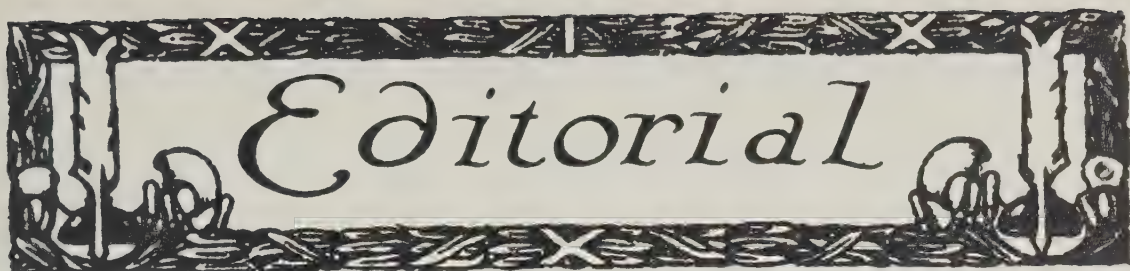
Examination revealed that the pulps are both dead, teeth not fully calcified and dark in color. No history of any injury or anything which might have caused this condition. The apical foramina are large.

What do you think may have caused this condition and what treatment would you suggest? Also, what type of restoration would you consider best?

You certainly have an unusual case and one difficult of treatment. The two most probable causes of the present condition are first, Traumatism, either before the eruption of the permanent teeth or a disturbance of them after eruption and before the complete calcification of the apices. The other probable cause would be the failure of calcification of the enamel and the loss of the pulps from dental caries and final fracture.

The treatment is none too easy without a close study near at hand. It would seem unwise to keep such infected teeth in the mouth of a growing child. If all infection can be cleared up temporarily silicate crowns might be applied for a short time, but some other kind of appliance will sooner or later have to be applied.





# Editorial

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MANITOBA—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA—E. H. Hetherington, D.D.S., L.D.S., Victoria.

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TORONTO, MAY, 1924

No. 5

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## New Acts of the Legislature of Ontario Affecting Dentists

For a number of years public health and public health education were under the direct charge of the Boards of Education and school trustees of the province of Ontario so far as school pupils were concerned. About five or six years ago an act was passed placing public health, so far as schools were concerned in the city of Toronto, under the department of Public Health. At the session just closed this latter principle has been made applicable to all the public schools of the province. In the discussion of the Bill before the legislature there was a sharp difference of opinion between the opposition and the government. The opposition held that the bill took away from parents their right of control of how or by whom their children were to be treated, while the government held that the common law was not being disturbed and under it all rights were preserved. The Bill passed as originally stated.

The new Ontario Mining Act provides that precious metals cannot be bought or sold without a license. The idea is to prevent "high grading." In other words to prevent those who have opportunities of picking up precious ores

from selling them. It must be recognized that under such an Act, dentists would have difficulty in selling their precious metal scrap. Through the influence of Drs. Berry and Clark, an arrangement can be made with a dental supply house for the purchase of scrap metals without much difficulty. A license will be issued through the supply house.

In the April issue of the "Toronto Globe" appears a statement that the dental students are right up against it as regards fees to the college. The government refused a grant to pay returned men's college fees which had been done for the past two years. The situation is rather a complicated one and goes back many years. The Alumni Federation of the University collected a large sum of money to build a memorial tower as well as provide scholarships and help to needy students. It was decided to make loans to returned students and hold back the building of the memorial tower for a time. The tower is now built and the loans are being returned to help pay for it and other obligations. A condition of the loan was that no students' fees were to be paid from it. Just why living expenses might be paid and fees not is not very clear except that the university was a government institution and should teach pupils without fees if the federation would keep them. Under this arrangement the dental college asked the legislature to make a grant each year to the college to the amount of the students' fees, each student agreeing to pay his fees sometime in the future. By this plan the college received payment of the fees and the promise to pay from the students as well. It appears that these deferred fee payments are specially earmarked to be used for dormitories for dental students and dentists.

The article which appears in the Globe says: "The other faculties such as Arts, Medicine and Applied Science are unaffected, as the Government backing still exists." Dentistry is not a faculty of the university and therefore does not come under university regulations. If it had been, the present situation would not have arisen.

The University of Toronto Monthly, under an unsigned article discusses the relations between the Dental College and the University. The writer presents a very good case against the establishment of a faculty. The writer is in error in stating that dentistry has been taught by the Board since 1875. The first efforts of the Board to teach dentistry were a failure and it was only when Drs. Willmott, Teskey and Stewart undertook it in 1875 until 1893 that it succeeded. At this



date the Board took over the school and has since directed the teaching of dentistry. The article might well be made the subject of a discussion except that it would give it more prominence than its merit demands. One sample will suffice: "The training of dental students would no longer be in the hands of the dental profession." As if dentists would not be engaged to teach dentistry in a university, just as teachers are engaged to teach teachers, or physicians to teach physicians. Surely the educational problems involved in teaching a dental student are no different from those involved in teaching an engineering student.

The real answer to the question is that over ninety per cent. of the dentists of the world are now being educated in universities and none but those from Ontario by the legally organized dental profession. Others have tried it but gave it up. Is the experience of the whole world wrong and Ontario right? It reminds one of the story of the proud mother who went to London to see the battalion march past in which her son was a private. As her son marched by she was heard to remark to her friends: "See, they are all out of step but my son Johnny."

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## Notes

Dr. B. F. Nott, North Bay, has been burned out twice in the same week.

Dr. Karl K. Dimock of Parrsboro, N.S., has opened an office in Windsor, N.S.,

Arthur H. Wilkinson, of Union Bay, B.C. has received his dental degree from the North Pacific Dental School.

Dr. Edmonds' Calgary, claim for a recognition of his half interest in the dental practice of Hollis and Sawyer, was granted by Chief Justice Harvey in the supreme court.

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## Obituary

Dr. C. V. Snelgrove, Toronto, died March 10th, 1924, following a short illness. From the time of his graduation in 1884, he practised in Toronto, first as a partner with Dr. Hopkins, and later alone. For many years he was an examiner in practical dentistry at the school of dentistry. He will be remembered as the man with the jolly, cheerful smile. As a dental practitioner he had few peers. As a companion he was a prince.

Dr. Snelgrove had many social and sporting diversions. He was especially interested in yachting, bowling and curling. He leaves a widow, two daughters and two sons to mourn. The writer had years of close personal acquaintance with Dr. Snelgrove during which time he was not receiving full justice for his efforts, but laid down his work without a complaint. He was a life-long member of old St. Andrew's Church and a mason from early manhood.

Dr. R. E. Stewart, Ontario, died following a long illness from sarcoma. The disease first attacked the bone of his left arm which was amputated. After this he gave up practice and joined the salesman staff of the Dental Company of Canada. During the past year he was compelled to give up work and remained at his old home.

Dr. Stewart attended high school in Elmira where he practised for eight years. He was a graduate of the Royal College of Dental Surgeons, School of Dentistry, Toronto. His career was a credit to his Alma Mater and to his many friends.

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**FOR SALE**—Two chair dental office and good practice in the province of Saskatchewan, this is a good opening for some wide awake man; inquire of Dental Company of Canada, Ltd., Toronto.

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**FOR SALE**—Complete Dental Equipment in old established office. Very cheap, including good will of office. Rent very reasonable. Apply to C. E. Klotz, 84 St. Paul Street, St. Catharines, Ont.

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**CAPABLE ENERGETIC DENTIST**—With an extensive experience and good class practice desires post as manager or operator. Willing to go anywhere. Age 36. Highest references. J. Limbrick, Central Chambers, 223 Wolverhampton Street, Dudley, Eng.

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**FOR SALE**—Established Toronto dental practice on busy corner in good locality; new equipment; moderate lease and reason for selling; price reasonable. Apply Box 10, Dominion Dental Journal, 73 Richmond St. W., Toronto.

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**FOR SALE**—Fischer X-ray Unit A1 condition. Takes Medical and Dental radiographs. Cash or terms. Box 11, Dominion Dental Journal, 73 Richmond St. W., Toronto.

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**FOR SALE**—Partial dental equipment in well established office in Alberta. Good opening for a young man. Apply Box 12, Dominion Dental Journal, 73 Richmond St. W., Toronto.

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**EXPERIENCED DENTAL NURSE** of good character, wants position in Toronto; bookkeeping, typing, gas, inlays, crowns and office routine; reference; moderate salary. E. M. Newson, 61 Victor Ave., Toronto.

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**WANTED**—Position or partnership by experienced operator. Graduate of 1919. Hold D.D.C. Certificate. Apply Box 13, Dominion Dental Journal, 73 Richmond St. W., Toronto.



# Dominion Dental Journal

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TORONTO, JUNE, 1924

No. 6

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## Canadian Oral Prophylactic Association President's Annual Address

*W. Cecil Trotter, B.A., L.D.S., D.D.S.,*

*Read at the annual meeting of the C.O.P.A., Jany. 1924.*

Gentlemen.

I regret to say that, about a month ago, our worthy President, Dr. McDonagh, owing to poor health, saw fit to resign as president of the C.O.P.A. It is now more than twenty years since he evolved the idea upon which this association was founded. At that time, some of us thought that he was too optimistic in what he expected this association to accomplish. Under his skilled guidance most of the objects which he planned have been accomplished.

Manufacturers of tooth preparations, although at first refusing to conform to our ideas of what a tooth preparation should contain, have generally speaking gradually fallen in line and we have much less to complain of in that respect than we had twenty years ago, and in the meantime, having our own preparation, which we knew to be right, we have been independent of the manufacturer. The same may be said of our tooth brush, which we all know has been frequently imitated, but never equalled.

When Dr. McDonagh organized this association, very little work was being accomplished by the various oral hygiene committees. Since then, after seeing what we were accomplishing, they have one by one taken up the work more vigorously until now they want to do all the work and ask us to stop and let them do it. Our methods of carrying on public lectures and propaganda work to secure examination of school children's teeth and the organization of dental clinics have been gradually adopted everywhere.

It was mostly owing to Dr. McDonagh's vision that we secured the services of Dr. Harry Thomson, who has done such wonderful educational work all over the Dominion that

we are without doubt looked upon as the greatest instrument for public dental education in Canada today. This feeling is no doubt what has led up to the recent organization of a Canadian Dental Hygiene Council, to be composed of prominent public spirited men and women, together with dentists, for the purpose of carrying on work very similar to what we have been doing. It was largely at the suggestion of Dr. McDonagh that the Department of Dental Research was organized at the University of Toronto and this in turn no doubt suggested the formation of the Dominion Dental Research Foundation.

So I think we will all acknowledge that Dr. McDonagh has been the instigator and director of much of the public dental educational work done during the last twenty years. If imitation is flattery, he certainly should feel well recompensed for the work he has accomplished and the great sacrifice he has made.

Although business conditions in general have not been very prosperous throughout the Dominion this year, your Association has little to complain of. In face of more keen competition our tooth brush sales have steadily increased, and in spite of a general falling off in demand, the sales of our tooth paste have held their own. We are still handicapped financially by the large number of brushes yet in the hands of the Lambert Pharmacal Co., at St. Louis. By dint of perseverance and hard work, we have been able to dispose of sufficient of these brushes during the last year to enable us to considerably reduce our obligation at the Bank. I hope we will be able to do at least as well during the coming year, but we really must make a determined effort to dispose of all what are left, even if we do it at somewhat of a sacrifice as we are steadily losing interest on the money which is tied up.

After a great deal of consideration and work, your executive thought they had consummated a deal with the L. D. Caulk Co., of Milford, Connecticut, which would result in great benefit to our organization and also to the community at large, but unfortunately, before finally ratifying this agreement, some of the L. D. Caulk officials, hearing that there was organized opposition to our association in certain quarters in Toronto came over here and after an investigation notified us that the deal was off as they did not care to run the risk of being involved in any controversy between factions of the dental profession.

Our Dental Executive, Dr. Harry S. Thomson, continues to be a tower of strength to our organization and has been



the means of making our work felt and appreciated all over the Dominion. Dentists everywhere look upon the Department of Education carried on by him as a regular encyclopedia of dental knowledge—always ready to help them out of their difficulties. A detailed report of the work done during the year in the Departments of Research and Education, accompanied by a financial report, will be given to-night.

Some very important matters regarding the plans for the future activities of the Association and direction they should take, ought to be calmly and thoughtfully discussed to-night.

Our thanks are specially due to Drs. McDonagh, Broughton and Thomson for the splendid work done during the year.

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## Canadian Oral Prophylactic Association

*Report of the Dental Executive*

*Harry S. Thomson, D.M.D., L.D.S.*

*Read at the annual meeting of the C.O.P.A. Jany. 19.*

A report from the Dental Executive of the work accomplished by the Canadian Oral Prophylactic Association in any one year must of necessity be a statement of activities, both Educational and Financial, in its relation to other years. So, the report that I am to give you tonight for the year 1923 is merely another chapter in the history of the Association, and the work done must be considered in the aggregate rather than that done in any particular year.

From the standpoint of the banker, the manufacturer or the merchant—the year 1923 was not an outstandingly prosperous one in any respect. But I am very glad to state that, from the standpoint of the C. O. P. A., both from a business and educational outlook, it has been one of the most successful years in the history of the Association. As the work is entirely dependent upon revenues received from Hutax products, it is necessary that we first review the situation from the purely business standpoint.

### *BUSINESS REPORT:*

*Tooth Brushes:* During the year 1923 the cash receipts from sales on Hutax Tooth Brushes were the greatest of any year in the history of the Canadian Oral Prophylactic Association, despite the fact that during this year competitors in the commercial field were more active than ever before—

particularly one campaign conducted by an American concern during the latter part of the year, where special bonuses were offered to salesmen and to clerks as an inducement to secure a distribution of their products. This activity has apparently not hampered in the least our success or distribution and this we take as a tangible proof of the stability of our design and the quality of workmanship, and that we have made the handling of the product by the druggist a reasonable profit-producing one, as well as giving satisfaction to the users in the quality of the brush.

We have during the year tried to maintain the highest standard in our brushes. The ones that are on the market at present are made by three firms only: Kent & Sons and W. H. Speer & Co., of London, England, and the Geo. R. Gibson Co., of New York, whose brushes are made in Japan. We have occasionally met with some criticism due to the fact that all of our brushes are not of English make. From the Imperialistic point of view of the association, entirely idealistic it is true, we wish that it might be so, but our sales agent claims—and we think justly—that the druggists as well as the dentist and consumer must come in for some consideration. At the present time, the cost of the English brush makes it necessary that it be sold in the stores at from 60c to 75c each brush. Now there are certain stores that will not handle the English brush only at this price, for they have a clientele that demands a brush of a lower price, say, from 40c to 50c retail. We have not yet found any way that this low priced brush can be provided from English manufacturers. We are also convinced that the people who buy a brush at this price are entitled to equal consideration as far as design and workmanship are concerned, although the materials used might not be quite equal to those in the English brush. So, from the standpoint of our sales agent, the druggist and those who cannot afford to pay the price of an English brush, we feel that we are still justified in distributing a Japanese brush to take care of this condition. During the year we have carried out an experiment endeavoring to determine the relative quality of all grades, checking off from the number of brushes returned. It is surprising to find that of the returns sent back to John Hargreaves, they are about equal in percentage. We are constantly watching for improvements in this particular line of our products and we are now in negotiation with one of these English firms in an endeavour to secure, if possible, sufficient English brushes at a price that will make it possible for us



to handle only English make thus taking care of the needs of all classes of people. Negotiations with this firm are necessarily slow on account of the distance, but we hope that early in the New Year we will be able to give a report on the result.

We would like to reaffirm our position in regard to our guaranteeing every brush that goes out and impress upon every member of the Association that each individual brush is guaranteed to give satisfaction, and if it does not it is cheerfully replaced by the druggist, who in turn sends it to our agent, John Hargreaves, 150 1-2 King St. East, Toronto. There is a most thorough inspection of all Hutax Brushes before they leave the factory. They are again inspected before they are sent out from our sales agents and our definite guarantee is marked on every box. We are doing all we can to safeguard the standard of these goods and give this assurance that every brush shall be satisfactory as far as we possibly can determine, and if through any human error or slip-up faulty ones are sold, our only recourse then is to fall back on our guarantee.

It is well that I should mention that during the year we have made it possible for a great many towns and cities in the Dominion of Canada to provide school children, through the Board of Education or School Trustees, with "Special for School Children" Hutax Tooth Brushes at less than cost price. This is made possible through the co-operation of our sales agent, Mr. John Hargreaves, who, in an endeavor to assist us in carrying out our ideals, furnishes these brushes to the schools at a special price, he as well as the Association taking a very decided loss on them. The good accomplished in this way is difficult to estimate, for the interest of the teacher is aroused, as well as that of the School Board, and instructions are given to the pupils on how to keep the mouth clean, with some definite means provided to assist them in their effort. I would suggest that this branch of the work be enlarged to its greatest possible scope, for I feel that greater good may be accomplished through such an effort than by many talks on Oral Hygiene. I would like here to express my appreciation of Mr. Hargreaves' interest and the high standard of ethics he applies to all his business activities—particularly those connected with the C. O. P. A.

*Dentifrice:* During the year 1923, our sales of Hutax Tooth Paste were exactly the same in volume as in the year 1922, which speaks well for the product, as the general business depression more or less affected all business activities and

the aggressive competition by competitors in this field was not in any way lessened, but was more intense. The formula has remained constant during the year, and in an endeavor to keep it up to the highest standard requirements of a dentifrice, we are constantly carrying on research work and studying the reports of the different scientific men engaged in this work, so that we may make any change that is called for to make it as nearly as possible ideal. At the present we feel that ideal means a harmless, efficient cleansing paste, not medicated and not promoting any strong chemical action in the mouth—one that will leave the mouth wholesome and sweet. Also, through the co-operation of Lyman Bros., we have been able to supply a "Special for School Children" Hutax Paste, to be sold through school teachers or Boards of Education, to school children at ten cents a tube. This is only possible through the co-operation of Lyman Bros., who as well as our brush agents, throw aside in this instance the purely commercial spirit, and enter with us into the spirit of our organization, in an endeavor to promote with every means in our power the gospel of a clean mouth and Mouth Health. We greatly appreciate this co-operation.

I regret that once again I must report that our brush business in the United States, under the agency of the Lambert Pharmacal Co., is not progressing. The reasons for this appear to be due to difficulties within the Lambert organization over which we have no control. We have used every means that we know of to overcome these difficulties. We have spent a great deal of time and money and are still putting forth every effort to try to liquidate this asset. Something must be done shortly and I anticipate that we will have to take considerable loss in order to dispose of them. This is very regrettable, but we feel that the matter is entirely beyond our control.

We are constantly being approached by commercial organizations who suggest to us different ways and means of carrying on the activities of Hutax products. During the year we had two definite propositions presented to us—one of which looked particularly promising at the beginning, but on further consideration did not develop. Your executive and two of your Directors made a visit to the United States to interview one organization regarding this matter and felt at the time it might be a highly advantageous plan for us to consider their proposition; but due to forces at work from within and without, we decided it was better that



our commercial arrangements should remain as they were for the time being at least.

I, personally, believe that an improvement might be made in the handling of Hutax products. One organization to sell both paste and brushes and to carry on all commercial activities would be most desirable. By this I mean advertising and all lines of commercial activity, especially as this arrangement would reduce the overhead expenses and handling. If this were done, I feel that our distribution would increase and provide a greater revenue for carrying on this work which we have so much at heart.

During the past year, our products have been shown, under the auspices of our Sales Agent for the brushes, John Hargreaves, at the meeting of the Ontario Dental Association, held at the King Edward Hotel, Toronto; at the New Brunswick Dental Society, held in Moncton, N.B.; at the meeting of the Nova Scotia Dental Society, held at Halifax, N.S. Samples of Hutax Brushes and Paste were distributed and the story of our Association told at each of the above.

#### *EDUCATIONAL REPORT:*

From an educational standpoint, the year 1923 has also been a banner year for us. Some of our departments have been used more extensively than ever before. Our research work has been going on slowly but thoroughly, a report of which is hereto appended and will be read separately.

The Department of Information in connection with our Research is taking care of a field of usefulness greater than we anticipated. We are enabled through the interest of some of the leading men in the Profession, to answer questions on difficult technique and major operations to men in remote parts which enables them to carry on work which might possibly have to be left undone. This work entails considerable expense, but we believe, is worthy of it. The letters of appreciation we have received from dentists from coast to coast are tangible proofs of their gratitude and of our opportunity to be constantly of greater service in this particular field. I would suggest that this work be enlarged more and more each year as our finances will allow.

Your executive has made trips to different parts of Canada, more particularly through the Province of Ontario, at the request of local dental societies, to assist in their Oral Hygiene work, and in all of these places an endeavor was made to carry out the wishes of the local societies and prove to them that our Association is of value, not only to them

as dentists, but to their entire community. Addresses were given to mens' clubs—Kiwanis and Rotary; Men's Church Clubs; Women's organizations such as Women's Councils, Women's Institutes, Daughters of the Empire, to groups of Collegiate and High School students, Boy Scouts and Girl Guides, School Teachers and Boards of School Trustees; also to the dental students of McGill University and the cadets of the Royal Military College at Kingston. In the City of Toronto during the year your Executive has addressed the Down Town Kiwanis Club; Riverdale Kiwanis Club; Students' Club of Trinity College; Young Men's Club of Trinity Methodist Church; Graduating Class of Royal College of Dental Surgeons; Graduate Dental Nurses; Royal College Dental Surgeons; third year class; Royal College Dental Surgeons; and the Health Officers of the Province of Ontario, at their Annual Meeting in Convocation Hall, May 28th. I would like it particularly understood that all of this work of a public nature is done solely under the auspices of local dental societies, while our work to dentists is done under the C.O.P.A. By this distinction, I want to impress upon you that we work only through the dental bodies, and any time that our Association appears before a public body it is at the request of a Dental society or a group of dentists. In all of these towns visited a meeting of the local Dental Society was held and a report given on the activities of our Association and the work that has been done in the Department of Dental Research, University of Toronto.

#### *MEMBERSHIP:*

During the year our membership increased by 100 members, which now brings our organization up to a membership close to 900—surely a most worthy tribute to the work we are doing; this membership constitutes a group of great potentiality to carry on the work to which our organization is dedicated.

#### *OUTLINE LECTURES AND SLIDES:*

During the past year our outline lectures have been in great demand, something over 200 of them having been sent out. Our lantern slides, too, have been constantly in use—so much so that it has been necessary for us to put a time limit on the holding of them, in order that we may serve the greatest number. We again recommend that this particular phase of the work, lantern slides, be discontinued just as soon as each Province takes on itself the providing of this branch of educational work. Our moving picture films have been used



by the Oral Hygiene Committees of several provinces and are at present all in use. I think some new films should be obtained or this work as well as the lantern slides be handed over to be done by each Province.

Before closing this report I think it is well that we should glance back over our past history and consider in the aggregate the work accomplished. Since 1922, when your Dental Executive entered upon the new programme, a little less than two years ago, 427 addresses have been given to dental societies and public bodies. From a purely educational consideration, this alone justifies our existence and I think it is agreed by every dentist in Canada that this particular sort of work has been productive of a great deal of good. Lessons can be better brought home to those most concerned in a direct manner through personal talks than through many pamphlets and literature. This work has covered Canada from coast to coast and we feel that it is just the forerunner of a greater work yet to be accomplished, whether through our organization or some other.

In looking back over some of our old reports, it is interesting to note how quickly we have grown. For instance, in looking at the report for 1908 I find that our receipts were \$273. That is only 15 years ago. Then let us jump to the year 1914. It seems such a short time since the war broke out, but in that year our receipts were only \$2,600, while this year, 1923, our cash receipts have been \$14,073.43. In 1920 (three years ago) our total membership was only 193; in 1923 it is 900. Surely our opportunity is great. With the service we have rendered and with the united effort of all concerned, both those in our organization and out of it, can anyone dare to foretell what wonderful good can be accomplished for Dentistry and Humanity. Our aim has been to promote this work to the best of our ability. We have had some criticism—maybe some of it was justified—but no good work was ever accomplished without some criticism, and if it can be proven to us that there is a better way of doing this work than we are doing it, I am sure every member of the C.O.P.A. will approve of any scheme with that end in view.

During this meeting, matters will arise for discussion which will have a most important bearing on the work for the future. It is to be hoped that all of us will consider this from a purely impersonal, unselfish viewpoint so that the ideals for which the organization was founded may be car-

ried on, to the greatest possible fruition, ever bearing in mind that the work we have accomplished is tremendously worth while, but the work we may still accomplish tremendously greater.

## **A Preliminary Report on the Relation of Streptococcus Viridans to Periapical Infection**

*By C. J. Fraser, M.A.*

From the Department of Dental Research, University of Toronto.

In the British Dental Journal of March 1st, 1923, Messrs. Round and Broderick published an article on "Some Remarks of Bacteriological Interest in the Treatment of Root Canals and Apices." For about two years somewhat similar work has been done in this department and although our original object differed from that of Round and Broderick there was a remarkable similarity in many points of technique and in the results obtained. At present our work is most incomplete, but it was thought, in view of the work of the above mentioned authors that a preliminary report on it might be of interest.

The first object of this present research was to determine what organisms were found most commonly at the apices of abscessed teeth and to correlate the bacteriological findings with the clinical and x-ray pictures. *Streptococcus viridans* has, of course, been definitely associated with foci of dental infection but we wished to determine in what proportion of periapical abscesses it did occur.

### *Bacteriological Study of Periapical Abscesses.*

The technique used, in general, was as follows. The tooth to be extracted and the surrounding gum were thoroughly swabbed with iodine. The tooth was then extracted and immediately, while it was still held in the extracting forceps, cultures were made from the apex to a blood agar plate and broth. In the extraction of the tooth Dr. B. R. Gardiner, who most kindly co-operated in this work and did most of the extracting, took as much care as possible to avoid touching the lips or cheek. Except for a few in the first of the series, any tooth which was suspected of having been contaminated from the mouth, either because of faulty technique or because of cavities which might expose the pulp chamber, was omitted from the series. In a few cases cultures were made from the first drop of blood to collect



after the removal of the tooth, as well as from the apex. Generally these cultures were identical, except when it was suspected that the apex had been contaminated during extraction. There were a few cultures, which may have been contaminated from the mouth, which were not omitted from the series either because of the clinical picture or because we were doubtful about the contamination. We thought it would be unfair to omit any from the series on the basis of suspected contamination from the bacteriological findings.

In all cases deep blood agar plates were made by Brown's method, for the most part from the original broth culture, and the types present classified accordingly. Those cultures—twelve in number—which were undifferentiated were so overgrown by organisms other than *Streptococci* that no attempt was made to isolate pure cultures of *Streptococcus viridans* from them. The smears from the broth cultures showed definite chains of gram positive cocci. All strains, here designated as *Streptococcus viridans*, correspond to Brown's alpha type—produce green colour on blood agar plates and are bile insoluble. There were variations in the degree of colouration produced but all were definitely green. Some strains formed the concentric rings of alternate zones of fixation and haemolysis more readily than others but even the most typical alpha would, except for the green colour, appear as an alpha prime if the plate were too densely seeded or the agar too deep.

As controls, cultures were made, using the same technique, from the apices of vital teeth which were extracted for reasons other than suspected infection. Unfortunately these are few—four only—but all four yielded sterile cultures. This method of control we consider most satisfactory and it corresponds to that of Round and Broderick who also report negative results. Another method of control was to make cultures from the surface of the gum after the application of the iodine and just before extraction. The gum was then cut down on either side of the tooth to be extracted and cultures were made from the incisions. The apex was cultured as usual and also the tooth was opened and a culture made from the pulp. In the one case which was tried, the cultures from the gum, incisions and pulp were sterile. That from the apex yielded pure *Streptococcus viridans*. This control, in conjunction with the sterile cultures from the apices of the vital teeth, we believe justifies the technique which we used. It is, of course, recognized that there are many opportunities for contamination but with care

and practice comparatively accurate results may be obtained. In the latter part of our series a larger number of pure cultures were obtained than in the first part. This was undoubtedly due to more efficient technique.

The blood plates were made by the addition of about 7 per cent. citrated human blood to standard agar—agar prepared from an infusion of fresh beef and adjusted to a p H. 7. 2. The broth media varied. In the earlier cultures standard broth of p H. 7.2. to which 10 per cent. ascitic fluid or 5 to 7 per cent. citrated blood had been added, was used. Later a so-called hormone broth was adopted. This medium is made from fat free beef heart with 1.5 per cent. peptone and the usual amount of sodium chloride (0.5 per cent.) adjusted to p. H. 7. 8. In its preparation it is filtered through neither cotton nor paper. Both streptococci and pneumococci grow readily in it. Its preparation is as convenient as that of standard broth and it eliminates the necessity of adding blood or ascitic fluid.

From cultures of the apices of 120 teeth obtained from 82 patients the following results were obtained:

*Streptococcus viridans* was isolated in 108 cases or 90 per cent.

Streptococci were recognized in smears but not isolated in 12 cases.

Pure cultures of *Streptococcus viridans* were obtained in 52 cases or 42 per cent.

From the 68 mixed cultures the following were obtained:

Streptococci with *Staphylococcus aureus*—11 times.

Streptococci with *Staphylococcus albus*—22 times.

Streptococci with *Micrococcus catarrhalis*—11 times.

Streptococci with *Staphylococcus aureus* and *Micrococcus catarrhalis*—8 times.

Streptococci with *Staphylococcus albus* and *micrococcus catarrhalis*—4 times.

Streptococci with gram negative bacilli—2 times.

Streptococci with gram negative bacilli, *Staphylococcus aureus* and *Micrococcus catarrhalis*—once.

*Streptococcus viridans* with *Streptococcus haemolyticus* (Beta type)—twice.

*Streptococcus viridans* with alpha prime type of *Streptococcus*—4 times.

*Streptococcus viridans* with alpha prime type and *Staphylococcus albus*—1 (once).

*Streptococcus viridans* with *streptococcus haemolyticus* and *Micrococcus catarrhalis*—1 (Once).



Thus, in brief, the results obtained were as follows:  
Streptococci were present in 120 cases or 100 per cent.  
Streptococcus viridans (alpha type) was isolated from 108 cases.  
Streptococcus haemolyticus was isolated 3 times.  
Streptococcus of the alpha prime type—6 times. —  
Staphylococcus aureus was present in 20 cases.  
Staphylococcus albus in 27 cases.  
Micrococcus catarrhalis in 24 cases.  
Gram negative bacilli in 3 cases.

Correlating the bacteriological findings with the x-ray and clinical pictures it would seem quite definite, that if the x-ray shows a small area at the apex of a tooth Streptococcus viridans can be isolated, almost invariably, as a pure culture. We are of the opinion that the few mixed cultures obtained when the areas shown in the x-rays were small were due to faulty technique. If the x-ray picture shows a large and diffuse area at the apex, and always if pus is present, Staphylococcus aureus is generally obtained. Micrococcus catarrhalis and Staphylococcus albus were found most frequently in those cases where pyorrhea was present in the mouth, not necessarily, however, about the tooth which was being extracted. Micrococcus catarrhalis was found invariably in those cultures omitted from the series which we knew had been contaminated from the mouth, either through cavities or during extraction and, probably, is of no pathogenic importance. Two of the cases, where Streptococcus haemolyticus was obtained, are of interest. The first was from a most acute abscess, and the second from a patient who for some years had had recurring attacks of a Streptococcus haemolyticus infection of the throat.

From our observations and cultural findings we believe that the primary infecting organism in all cases of periapical abscess to be Streptococcus viridans. Secondary infection with other types of organisms frequently occurs—i.e., Streptococcus haemolyticus, staphylococcus aureus or albus—and the x-ray pictures may be modified accordingly.

#### *Differentiation of Streptococcus Viridans*

The questions naturally arise—are all strains of Streptococcus viridans obtained from the apices of abscessed teeth identical or are there predominating types which could possibly be definitely associated with other pathological conditions.

Streptococcus viridans has long been associated with

certain systemic diseases—more especially rheumatism of certain types and Streptococcic septicaemia. There are two possible points of view. The tendency has been to consider that a localized focus at the apex of a tooth is always the primary source of infection. From this localized area bacteria enter the circulation and are carried to other parts of the body where they localize and establish secondary foci which then become new sources of infection. In carious teeth the presence of bacteria at the apices may be explained by their passage down the pulp chamber; in non carious teeth access must be gained by injury to the surface of the gum and the transportation of the bacteria in the blood or lymph. The specific localization is probably due to slight or chronic injury to the tissue at the apices as a result of trauma. The second point of view is that the primary focus of infection is elsewhere—in the antrum, tonsils, throat or appendix—and the bacteria are carried in the circulation from this focus to the teeth and there form secondary foci of infection. The selective localization at the apices of the teeth is, under these conditions the same as previously, due to trauma.

From either of the above points of view, and undoubtedly both conditions do occur, it should be possible by the correlation of the x-ray and clinical pictures with the bacteriological and serological findings to determine if there is any strain or strains of *Streptococcus viridans* specific for periapical abscesses and other pathological conditions with which they are commonly associated. With this in view, cultures of *Streptococcus viridans* were obtained from appendices and from blood cultures from cases with endocarditis in order that they might be compared with strains from the apices of teeth.

The classification of *Streptococcus viridans* based on the fermentation of carbohydrates was first attempted. The fermentation reaction of about fifty strains obtained from various sources but for the most part from abscessed teeth, were tested on the carbohydrates most commonly used for streptococcic differentiation—glucose, lactose, saccharose, maltose, mannitol, dulcitol, inulin, salicin and raffinose. The medium used was sugar free broth with Andrade's indicator of about p. H. 7. 2. to which had been added 10 per cent. ascitic fluid and 1 per cent. of the carbohydrate. The reading, made after forty-eight hours, was generally clear cut. In a few tubes which showed no fermentation in this time after longer incubation the reaction was doubtful. When the strains were tested again some months later for their fer-



mentation reactions there were a negligible number of discrepancies between the duplicates. Though none of the strains fermented dulcitol, or inulin, and all fermented glucose, saccharose, maltose and litmus milk, the variations with the other carbohydrates were too numerous to be a basis for any classification.

Classifying our strains, however, according to the fermentation of salicin mannite and lactose by *Streptococcus viridans* (Andrews and Horder's classification) of 52 strains, of which all but four were obtained from the apices of abscessed teeth, the following grouping was obtained:

Thirty were *Streptococcus salivarius*—fermented lactose but neither salicin or mannite.

Sixteen were *Streptococcus mitis*—fermented lactose and salicin but not mannite.

Six were *Streptococcus faecalis* which fermented all three carbohydrates.

Another suggested classification for streptococci has been according to the maximum production of acid in a medium with a constant concentration of sugar. Though the amount of acid produced within a stated time remained comparatively constant for each strain there were many variations between the strains. Some strains produced a greater amount of free acid during the first forty-eight hours of incubation than did others, but there was no clear cut line of differentiation. Compared however, to the acid produced by other types of streptococci that produced by *Streptococcus viridans* is quite low.

In ten cases where pure cultures of *Streptococcus viridans* obtained on the first culture from periapical abscesses white mice were injected intraperitoneally with 0.5 cc. and 1. cc. of this original eighteen hour hormone broth culture. In no case did death occur in two weeks. The mice were quite ill—some more so than others—within one hour after receiving the dose but all were quite recovered in twenty-four to forty-eight hours.

Original cultures of two strains obtained from two teeth of the same patient in a dose of 0.5 cc. did kill the mice in two hours. This organism retained its virulence and after sub-culturing six months 0.5 cc. of 18 hr. broth culture will still kill a mouse in 6—8 hours.

*Streptococcus viridans* obtained from periapical abscesses is with few exceptions non-virulent.

Agglutination by specific sera is considered to be one of the most important and satisfactory means of classifying

different types of bacteria. Sera were obtained by repeatedly injecting rabbits intravenously with suspensions of strains of *Streptococci*—three with *Streptococcus viridans* from blood cultures, four with strains from abscessed teeth, and one with a streptococcus of the alpha prime type obtained from a patient with asthma. Each of the eight sera thus obtained had an agglutinating titre of at least 1:2560 for the homologous strain.

In connection with agglutination tests there are certain outstanding difficulties that may render the results unreliable. The most important factor is the difficulty of obtaining good suspensions of the organisms. Even after repeated transfers many strains spontaneously agglutinate—especially when the organisms are suspended in 0.85 per cent. sodium chloride. After trying various concentrations of sodium chloride we concluded that the least spontaneous agglutination occurred, without any decrease in the specific agglutinating titre of the serum, when 0.5 per cent. sodium chloride was used. Lower concentrations of sodium chloride, which decreased the spontaneous agglutination also lowered the titre of the specific agglutinating serum and prevented clear cut readings. Hormone broth was even more efficient in preventing spontaneous agglutination—some strains forming good suspensions in this medium only. The sodium chloride concentration in this broth is also 0.5 per cent. but the peptone undoubtedly has some protective action. When duplicate tests with strains not spontaneously agglutinating, were made using 0.5 per cent. sodium chloride and hormone broth for the suspension of the bacteria and the dilution of the sera the agglutinating titres of the sera corresponded. Too heavy emulsions are also sources of error as they sometimes give apparent agglutination at low dilutions of the sera.

Cross agglutination was tested for with the sera mentioned above, against approximately fifty strains of *Streptococcus viridans*. One serum, specific for a strain from a periapical abscess was tested against a few strains only but will be referred to later. When five of the sera were tested within a couple of days after being obtained against the non-homologous strains, in a few cases cross agglutination occurred. When the experiment was repeated after the sera had stood some weeks the same results were not obtained though the titre for the homologous strains remained unchanged. Agglutination often occurred at dilutions of 1:10 or 1:20 but we consider that such a titre is of no value. In five tests cross agglutination occurred at dilutions of 1:160



to 1:640. This undoubtedly indicates a somewhat closer antigenic relationship between the strains agglutinated and the strains for which the agglutinating sera were specific than between the strains which these sera did not agglutinate. In six tests only did cross agglutination equal to that with the homologous strain occur. Two of these were with a serum specific for a strain of *Streptococcus viridans* from a blood culture. The strains agglutinated were obtained from the pulp chamber of two teeth extracted from the same patient from whom the blood culture had been obtained. Sera were obtained homologous for two strains of *Streptococcus viridans* from the apices of two teeth from the same patient with an interval of about six weeks between the extractions. The sera mutually agglutinated both strains. One of these sera, which is referred to above, was tested against only a few other strains but these few corresponded to the agglutination tests with the other serum which was used more extensively. Two other strains only were agglutinated at the same titre as the homologous strains. The fermentation reactions on the carbohydrate were identical for the strains agglutinated and the strain homologous for the serum. Other strains with similar fermentation reactions were not agglutinated. There was no cross agglutination of the alpha strains, except in titres of 1:10 by the serum specific for the alpha prime strain.

The seventh serum, not yet reported on, was homologous for a strain of *Streptococcus viridans* obtained from a blood culture from a case of endocarditis. Some thirty strains were tested for cross agglutination against it within two days after the serum had been obtained. Twenty strains were agglutinated at approximately the titre of the control (1:2560). This suggested a polyvalent serum from a mixed culture but the strain had been obtained by several transfers from a single colony. The other possible explanation is that this cross agglutination is due to common antigenic factors or group antigens. Adsorption tests were tried with some five strains that had been thus agglutinated. The homologous strain removed the agglutinins for all the strains. The other strains removed the agglutinous specific for themselves and but very slightly lowered the titre for the homologous strain. In the adsorption of the agglutinins from the serum very heavy suspensions of bacteria were added to the serum—the sediment obtained by centrifugalizing at least 50 cc. to 60 cc. of an eighteen hour hormone broth culture was added to 0.2 cc. undiluted serum to make a dilution of 1:10 serum. In the earlier experiments the serum was left exposed to the bacteria

for sixteen hours at 56° c. It was found that under these conditions the agglutinins for the strains, other than the homologous one, were destroyed. The titre for the homologous strain remained practically unchanged. On reconsidering our earlier results, where discrepancies occurred with strains which had been agglutinated with fresh sera, in conjunction with these more recent results, we believe the conditions to be analogous. That is, we believe the aging of the sera has probably the same effect as the heat, namely, the destruction of the non specific or group agglutinins. The only supposition to be offered at present is that by the inoculation of *Streptococcus viridans* there are produced agglutinins specific for the homologous strain and also group agglutinins. The group agglutinins are thermolabile and are destroyed by age. The specific agglutinins are relatively thermostable and are not destroyed even when the serum is many months old. Much more work must however be done on this phase of the work before even any assumption is justifiable.

### CONCLUSIONS.

1. *Streptococcus viridans* cannot be satisfactorily classified according to the fermentation reactions on carbohydrates. If the classification according to that of Andrews and Horder based upon the fermentation of salicin lactose and mannite is accepted then *Streptococcus salivarius* is the predominating type of *Streptococcus viridans* found in periapical abscesses.
2. From the agglutinating experiments it would seem that there is no strain of *Streptococcus viridans* which predominates in periapical abscesses. The same strain, from a serological standard, may however be obtained from the blood apices of the teeth and pulp chamber or from different teeth of the same patient.
3. Though there appears to be no predominating type of *Streptococcus viridans* there may be a group relationship and some common antigenic factor or factors. Occasionally strains from different sources may appear to be identical but this occurs rarely.
4. There appeared to be no marked resemblance in the clinical pictures presented by the patients from whom the strains, which were from different sources and cross agglutinated, were obtained.

With few minor additions the above is reprinted from the British Dental Journal, Dec. 1, 1923.



## What Has the Patient a Right to Expect from the Dentist?

*R. D. Thornton, D.D.S., L.D.S., Richmond.*

*(Continued from May Issue)*

The old empirical methods of making a physical examination are no longer considered sufficient by the medical profession. They insist upon the scientific findings of the laboratory in conjunction with their clinical evidence. They require also a complete examination of all organs including the teeth and, if in doubt, will call in the services of the specialist in order to find what is actually present. This is only fair to their patients and a similar practice should be adopted by the Dental profession. When a dentist examines a patient he should be on the alert for any manifestation of disease that comes within his field of observation. Dr. Bazin of McGill University, Montreal, has rightly stated that the responsibilities of a dentist are "not to care for the teeth only, but to care for the individual who possesses the teeth." At the recent convention in Cleveland of the American Dental Association, Dr. William J. Gies of Columbia University, New York, stated that "a responsible dentist should be a competent diagnostician of all dental and oral disorders. He should be versed in the knowledge of the relations of all dental and oral conditions to systemic disorders.

"A responsible dentist should be master of accumulated knowledge pertaining to the systemic diseases that may appear in the mouth. He should be competent to apply this knowledge to promotion of the welfare of his patients. He should perform the collateral *advisory* health service of giving suitable *guidance* to the patient, in full realization of his professional duty to every one in his care."

What, then, has a patient a right to expect of the dentist? It would seem that the first and most important factor is a careful examination and judical diagnosis. Most practitioners realize that in many cases this cannot be carried out until the mouth has been thoroughly cleansed of all deposits, stains, etc. After this is accomplished, what shall we then look for? And what should we take into consideration in arriving at our conclusions? There are three general factors which seem to affect our decisions, viz; the general

appearance of the patient, the family history and the personal history. It is impossible to get a true perspective without the general information. A casual glance at the patient may indicate anaemia, undernourishment, especially in children, faulty development, impaired circulation and numerous other defects in the general system. Manifestations of systemic diseases having their origin in infection may also be noted in this way. Patients should be questioned regarding their health and such questions should be made specific. Many people will answer in the affirmative if asked whether they enjoy good health, but when asked if they ever suffer from rheumatism or other diseases specifically named, they will give a positive history of such ailment. If they are suffering from any disease which has its origin in infection, it may be necessary to refer them to their physician for a physical examination to determine the possible presence of other foci of infection before eradicating every tooth that might fall under suspicion.

The family history of the patient is also valuable in this connection. If the patient gives evidence of early demise in his family connection, from causes which are produced by infection, it is quite possible that he may have inherited a lowered resistance against infection or that his environment is very similar to that under which his deceased relatives lived and such environment may not be conducive to a strong resistance against bacterial invasion. Again, in young patients, some families seem susceptible to caries until a certain age is reached, then, in some unaccountable manner, they develop an immunity to caries and remain practically immune throughout the remainder of their life.

The personal history of the patient should also be considered at this early stage of the examination. It is important to know the approximate age. Changed habits of living due to climate, occupational or dietary changes may cause marked systemic disturbances. The regular routine of life may be entirely re-arranged by a transfer from one vocation to another. The amount of rest and recreation received under the new conditions of living may be inadequate. As a result, the organs of elimination may fail to function properly and the resulting auto-intoxication may manifest itself in the mouth as readily as elsewhere. Previous illness or serious surgical operations may have played their part in lowering the resistance of the patient. Pregnancy, either at the time of examination or in the recent past, may be a



disturbing factor. The history of the patient's reaction to previous periods of pregnancy, if any, may be very helpful in making a diagnosis.

The results of focal infection in the past should also be recorded if the patient gives a history of having suffered from such. If ill at the time they present themselves for examination, a more accurate record of their case can usually be obtained from their family physician than the patient is able to give personally. Phagedenic gingivitis in its sub-acute stages is sometimes treated for long periods of time without success. While it is not always associated with a luetic infection, a Wasserman test is usually desirable and it will frequently be found that where the mercurial or arsenical treatments are indicated, the gingival lesion will yield to treatment much more readily after these have been used. In complicated cases, the use of laboratory tests is assuming a more important place in dental diagnosis.

Wherever there is a suspicion of pulpless teeth or pathology of the gingival tissues, the examination should be accompanied by Roentgenograms and study models. It is quite impossible to observe the full relation of the lower teeth to the uppers in position in the mouth. Diagnosis, however, should not be based upon these alone. The patient should be present so that the clinical observations may be used in conjunction with the conditions shown by the Roentgenograms and study models.

Having made a general survey of the situation, a detailed examination should be carried out. The personal care of the mouth should be noted. The condition of the soft tissues of the palate, cheeks, lips, floor of the mouth, gum and gingival tissues, tongue and saliva should be observed and recorded. Missing teeth should be noted and an entry made as to whether they have been extracted or have not erupted. In young patients, the anticipated dates of eruption of other teeth already in place. In adult patients, unerupted teeth should be viewed with suspicion and either removed or kept under close surveillance by the aid of Roentgenograms. The pressure exerted by some of these unerupted teeth seems to be enormous and may be very injurious to the health of adjacent bone tissue or to the nerve supply in that area. There does not seem to be any theory extant which satisfactorily explains the eruption of teeth except that it is a process of nature but an unerupted tooth should not be looked upon as a harmless, dormant object. It may still

be struggling heroically to assume its proper position in the arch and perform the function it was originally intended to perform.

The presence of growths in the soft tissues or of pathologic areas on their surface should be sufficient evidence that a thorough examination of them should be made. If their etiology or their treatment carries them beyond the field of dentistry, then the patient should be referred to the medical diagnostician for further care, but the patient is quite justified in expecting that the dentist will observe any departure from the normal that is present in his mouth and will advise him of the fact.

The examination of the gum and gingival tissues should be very carefully made. Any departure from their normal color or from their firm condition should invite the most thorough search for the cause. It is hardly fair to the patient who places himself under the care of one who professes knowledge in the science of dentistry, to be turned away without a conscientious effort having been made to discover the cause of such changes. It is true, the cause may be very obscure and may also be quite remote from the area where its effect is made manifest, but this does not excuse the dentist for passing over these conditions lightly.

The presence of cavities and the efficiency and comfort of restorations previously inserted should also receive careful attention. The fact that no decay can be found around the margins of an old filling, does not, in itself, determine the efficiency of that restoration. If it is not properly contoured so that it will function as the natural tooth was intended to function, it should either be trimmed to proper contour or else removed and a new restoration made that will be efficient. Its very presence may cause or permit injuries to the gingival tissues. It may favor conditions which produce caries or disturb the relation of the teeth in that arch to each other or to their antagonists in the opposing arch. The search for gingivitis may reveal that many of these old restorations are directly or indirectly the cause, therefore, whenever such restorations are observed the condition should be corrected before the lesion has had time to advance further. The excavation of decay and the filling of cavities does not remove the cause which produced them. As a matter of fact, after filling, the tooth is usually in a less desirable condition to resist a recurrence of decay than it possessed previous to the original attack.



Any tendency to overlook the care of the deciduous teeth should be discouraged. During the period that they are supposed to be in function, children are in the most active stage of their careers. They seldom take time to walk from one place to another but run. They rarely stand still but jump or kick their heels together when they have nothing better to occupy their attention. This all takes energy and it requires nourishment to produce energy. Besides producing energy, they must repair waste body tissue and build up sufficient new body tissue to provide for growth. There is no other period in their lives when it is so essential for them to be able to extract all the nourishment possible from their food. For six or seven years of their childhood they are sadly enough handicapped by the process of shedding and eruption. Added to these troubles, they have to contend with the calcification and decalcification of teeth that is progressing in the jaws. At six years of age, a child has forty-eight teeth at different stages of development. Surely this is a large enough task for the average healthy child to contend with. Children have more need of good teeth than adults have. This admonition is not confined to carious conditions alone. It is very essential to watch for signs of faulty development of the arches. It is a significant fact that the permanent molars erupt at the ages of six, twelve and eighteen years respectively. This gives a period of six years in each case for the posterior part of the arch to develop sufficiently to permit the eruption of another molar. In the anterior part of the arch a similar state of development should be in progress. The permanent cuspids and incisors are much larger than the deciduous teeth which they succeed. As the crowns do not increase in size after eruption, the arches should expand sufficiently before the permanent teeth make their appearance, to cause considerable space between the deciduous anteriors. This separation of the deciduous incisors and cuspids should be noticeable about four and a half years of age. If there is no evidence of it at five years, the little patient should be referred to the orthodontist for treatment or, if this is impossible, the family dentist should do his best to locate the cause of the trouble and have it remedied. It seems much better practice to force the arches to develop so that the permanent teeth may come into their normal positions than to attempt to move them after they have assumed an alignment in the arch that is quite irregular. Furthermore, the changes produced by the

orthodontist are not confined to the teeth and their investing structures alone. The bones and sinuses of the face are also affected. This is quite noticeable in the changed facial features of the patient in those extreme cases so frequently seen, and the world judges our dispositions and our temperaments by the contour and expression of our faces.

When should dental supervision begin? Noyes states that "by the middle of the second month of development the arches of both upper and lower jaws are completed." Bailey's Text-book of Histology is authority for the statement that "the earliest indication of tooth formation occurs about the seventh week of intra-uterine life." As body tissue must be built up from the food taken as nourishment, it seems logical to believe that the food consumed should contain all the elements necessary for the development of the various tissues. Recent research work by Mrs. May Mellanby of Sheffield, England, tends to prove that the calcium and phosphorus in the diet are not retained in the tooth structure or if retained, are not built into dense compact tissue unless a sufficient amount of Vitamin A. is also consumed. As the developing fetus depends upon the mother for its nourishment, it seems logical to infer that dental instruction and guidance should begin with the expectant mother as soon after conception as possible.

The same guidance, at this time, assists in the prevention of trouble in the mouth of the mother and makes for the development of sound teeth for the child so that they should have a higher resistance against caries than would be possible if the tooth tissues were structurally defective. Many of our prevalent dystrophies might be prevented by careful guidance at an early period.

Erosions and abrasions usually require careful investigation. Many of the abrasions that are seen appear to be easily explainable but the progress which others make is difficult to understand. Erosion seems to vary in different localities and in different classes of people. The late Dr. G. V. Black recorded the statement by one practitioner that all his patients had erosion. When requested to send impressions of his cases to Dr. Black, he furnished so many casts in a short time that his statement seemed to be borne out by the evidence presented. These were practically all well-to-do people.

There are many other phases of this subject which might be presented. One, however, seems so important that it



should be introduced here. That is the retention of spaces created by the loss of a tooth. When the teeth are in proper alignment in the arch they give support to each other by means of the contact points. When a contact point is lost, either by decay, faulty restoration, or by loss of the entire tooth, the lateral support to the adjacent teeth is also lost. In addition to this, the resorption of the alveolar process deprives the roots of the adjacent teeth of some of their anchorage. Retention in their normal position, therefore, depends upon the relation of the incline planes to the plane of the opposing teeth and of certain groups of fibres of the pericementum. Most practitioners are aware of the impossible conditions which present for partial restorations after drifting has occurred. Would it not be advisable, therefore, to insert some form of restoration, at the earliest possible date, which will replace the lost lateral support to the remaining teeth in the arch and at the same time restore the function of the lost tooth to a partial degree at least?

The social economics of dental service also demands some consideration by the profession. There are many people who appreciate the importance of caring for the teeth but they feel unable to lose their pay for the time required to have the service rendered and also pay the dentist for his outlay on their behalf. Overhead costs may be greatly reduced by institutional work, undertaken as a State proposition or cared for as is done at present by some of our industrial concerns. There are some objections to the dental hygienist in private offices, but the hygienists might very well be considered as a factor in the reduction of the cost of operations in institutional work, particularly in those institutions which are under State supervision. The improved mental and moral effect produced by adequate dental services to many men and their families who are not now receiving it, would justify any effort or money expended upon it and would add more honor and prestige to the dental profession than can ever be attained by serving only those who at present seek our services.

In conclusion may it be stated that the patient has a right to expect that the dentist will so advise, guide and teach him regarding matters of oral hygiene that he may be safeguarded against the invasion, by way of the oral cavity, of preventable diseases, keeping ever in mind the ultimate efficiency of the dental armament until the patient has reached his allotted

three-score-and-ten-years, or more if good health can enter as a factor in the extension of life beyond that span of time.

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# Dentistry in Great Britain

(Continued from the May Issue)

## REGULATIONS RELATING TO THE LICENCE IN DENTAL SURGERY, L.D.S., R.C.S.ENG.

(These Regulations apply to all Candidates who pass the Preliminary Examination in General Education on or after January 1, 1923)

### FIRST PROFESSIONAL EXAMINATION.

(1) The First Professional Examination consists of Part I. Dental Mechanics; Part II, Dental Metallurgy; and Part III, Section (a) General Anatomy and Physiology, Section (b) Dental Anatomy and Physiology, and is held in January or February, April, and September or October in each year.

(2) Candidates may present themselves for the several Parts of the First Professional Examination together or separately, but before admission to any part of the Examination they must produce evidence of having passed the required Preliminary Examination in General Education and the required Pre-Medical Examination or a certificate of having been registered as a Medical or Dental Student by the General Medical Council.

#### Part I.—Dental Mechanics.

(3) This examination is a practical one, conducted in the Mechanical Laboratory of one of the Dental Hospitals in London.

(4) Candidates must give twenty-one days' notice in writing of their intention to present themselves for the examination and at the same time forward certificates:—

- (i) Of having been engaged during a period of not less than two years in acquiring a practical familiarity with the details of dental mechanics. One year at least of this study must be taken in the Mechanical Department of a recognized Dental Hospital where the arrangements for teaching Dental Mechanics are satisfactory to the Board of Examiners in Dental Surgery. Part or whole of the rest of the course may be taken as a pupil with a competent dentist provided that time spent as a private pupil shall be at least twice the time required for the corresponding instruction taken at a Dental School.

*This instruction may be taken prior to the date of passing the Examination in General Education and the Pre-Medical Examination, but will not be counted as part of the required four years of professional study unless taken after passing the Pre-Medical Examination.*

- (ii) Of having attended at a recognized Dental Hospital and School:—

- (a) A course of lectures on Dental Mechanics.

- (b) A course of Practical Dental Mechanics, including the manufacture and adjustment of six dentures and six crowns.

(5) At the Examination in Dental Mechanics candidates will be required to provide themselves with the following instruments: wax spatula, double-ended; sculptors; gouge; vulcanite files; gold files; pliers, pin-roughing, bending, and collar; metal cutting shears; plate cutters; plate perforator; broaches; chasing punches; riveting hammer; fret-saw frame and saws; Melotte's moldine outfit; mouth blowpipe; solder tweezers; crown holder; borax slab; dividers.

The following instruments will be supplied by the hospital at which the candidates are examined: hammers for striking up plates; horn mallets; ordinary casting materials and apparatus; Bunsen burner.

(6) Any candidate referred at this examination, who does not hold a registrable dental qualification, will be required, before admission to re-examination, to produce a certificate of having received three months' further instruction under the conditions specified in Certificate (1) paragraph 4.

#### Part II.—Dental Metallurgy.

(7) This examination is conducted by written paper. A synopsis is appended.

(8) Candidates must give twenty-one days' notice in writing of their intention to present themselves for the examination, and at the same time forward a certificate:—

Of having attended at a recognized Dental Hospital and School:—

- (a) A course of lectures on Dental Metallurgy,

- (b) A course of Practical Dental Metallurgy.

(9) Any candidate referred at this examination, who does not hold a registrable dental qualification, will be required, before admission to re-examination, to produce a certificate of having received, subsequently to the date of reference, not less than three months' instruction in dental metallurgy in a recognized dental school.

*Part III.—(a) General Anatomy and Physiology. (b) Dental Anatomy and Physiology.*

(10) This examination is partly written and partly oral. Synopses are appended.

(11) Candidates may enter for Section (a) only or for Sections (a) and (b) together on producing the required certificates, but they will not be allowed to proceed with Section (b) until they have passed in Section (a). In the case of a candidate who enters for both Sections and fails in Section (a) the fee paid for admission to Section (b) will not be forfeited, but will be credited to the candidate on re-admission to examination in that Section. Candidates who enter for both Sections together may pass in Section (a) although failing to pass in Section (b).

(12) Candidates must give twenty-one days' notice in writing of their intention to present themselves for the whole or for one Section of this examination and at the same time forward certificates:—

(1) For Part III (a)—

Of having attended at a recognized Medical School:—

(a) Courses of instruction in Anatomy, including special demonstrations on prepared dissections during three terms.

(b) A course of dissections to include, if possible, the head and neck, during one term.

(c) Courses of instruction in Physiology, including General Biology, Biochemistry, and Biophysics, during three terms.

(d) A course of instruction in Histology.

(2) For Part III (b)—

Of having attended at a recognized Dental School:—

(a) A course of instruction in Dental Anatomy and Physiology.

(b) A separate course of instruction in Dental Histology, including the preparation of Microscopical Sections.

(13) A candidate referred at this examination, who does not hold a registrable dental qualification, will be required before re-admission to Section (a) to produce a certificate of three months' additional study of Anatomy and Physiology at a recognized Medical School, and will be required before re-admission to Section (b) to produce a certificate of three months' additional study of Dental Anatomy and Physiology at a recognized Dental School.

*Exemptions.*

(14) Candidates who have passed Section I of the First Professional Examination of the Conjoint Examining Board in England, or who produce evidence of having passed the Examination in Anatomy and Physiology for a degree, or other qualification, in Medicine or Surgery, registrable under the Medical Act of 1886, or for the degree of M.B. or M.D. of a Foreign University recognized by the Conjoint Examining Board in England, are not required to pass Section (a).

SECOND PROFESSIONAL EXAMINATION.

(1) The Second Professional Examination is held in February, May or June, and November in each year, and consists of:—

Part I. General Surgery and Pathology.

Part II. Dental Surgery and Pathology, and Practical Dental Surgery.

(2) Candidates who have passed the First Professional Examination at least six months previously may present themselves for Part I only on producing the certificates mentioned in paragraph 6 of this chapter, or they may enter for the whole examination at one time on producing the certificates mentioned in paragraphs 6 and 10 of this chapter.

*(The interval of six months is not required in the case of a Colonial or Foreign Dentist.)*

(3) Candidates must pass in Part I before proceeding to Part II.

(4) Candidates who enter for the whole examination at one time may pass in Part I although failing to pass in Part II; but, if they fail to pass in Part I, they will not be allowed to proceed with the Practical and Oral Examinations in Part II. In such cases the fee paid for admission to Part II will not be forfeited, but will be held over until such time as the candidate is re-admitted to examination in that Part.

*(To be Continued)*



# Editorial

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## Dental Foreign Bodies in the Air and Food Passages

Louis H. Clerf, M.D., in the United States Naval Medical Journal reports forty objects of dental origin found in the air and food passages of patients in the Jefferson Hospital, Philadelphia. They include artificial dentures, gold crowns, bridges, fillings, orthodontic appliances, broaches, reamers, burs and teeth. The author's conclusions are that, "All dentures should be kept in good repair and properly fitted. The mouth should be carefully inspected for dentures, loose teeth, and any loose corrective appliances before administering a general anesthetic, and the same precaution should be taken in all cases of unconsciousness. Persons wearing dentures should always remove them before going to sleep.

"In exodontia, especially under a general anesthetic, packs or a dam should be properly placed to prevent aspiration of teeth fillings or crowns. Every tooth, fragment or filling should be accounted for in the same manner as the abdominal surgeon accounts for sponges and instruments used before completing the operation.

"Orthodontic appliances should be securely fixed in situ, as application by the patient is often carelessly done.

"If there is any question about the loss of a tooth, ap-

pliance or filling, careful Roentgen-ray examination from the nasopharynx to the tuberosities of the ischia should be immediately insisted upon. Only in this way can the reputation of the dentist be safeguarded and the interests of the patient served."

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## **Dental Research at Mellon Institute**

Director E. R. Weidlein of Mellon Institute of Industrial Research of the University of Pittsburgh has announced the establishment by R. E. Squibb & Sons of New York, N.Y., of an Industrial Fellowship that has for its purpose the investigation of problems relating to the chemistry of preventive dentistry. Plans have been formulated for the study of the following problems: (1) relation between composition of saliva and dental disease; (2) effect of different diets upon composition of saliva; (3) action of acids upon enamel; and (4) physical and chemical properties of the tooth. The results of these investigations will be published from time to time, as the progress of the work seems to warrant.

The incumbent of this Industrial Fellowship is Dr. C. C. Vogt, who has been a member of Mellon Institute, engaged in research on various dental problems, since 1914; and he will have the benefit of the advice and clinical co-operation of Dr. H. E. Friesell, Dean of the School of Dentistry of the University of Pittsburgh. The resources of dentistry and chemistry will thus be combined for the solution of important dental problems.

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## **Beware of the Itinerant**

Our attention has again been called to the all too frequent calls from itinerant salesmen of dental supplies. The subscription agent is another type of itinerant who is not always above suspicion. It is a very simple thing for a glib tongued salesman to pick up a quantity of dental supplies in the United States and come to Canada and sell them. He pays no rent, no taxes, no income tax, no duty, gets his cash and slips away. Not infrequently the supplies offered are below standard or are even valueless. Occasionally dental equipment or scrap gold are taken away for repairs and refinement, only never to return. Beware of the itinerant. There are plenty of reliable dental firms in Canada to take care of all the needs of Canadian dentists.



## Notes

Drs. Johnson and Gallie of Chicago were welcome guests at the Ontario meeting.

The unveiling of the portrait to the late Dean Willmott adds another permanent remembrance to the memory of one who served his day and generation with honor and distinction.

The Deaner Institute of Kansas City was officially opened May 23 and 24. This institute is a real innovation in dental practice. A number of distinguished dentists and physicians have joined together to conduct a dental practice along the lines of the Mayo clinic. A large endowment was left by Mr. Deaner for its establishment and maintenance.

Dr. Edmond Noyes has published a new edition of his book on "Ethics and Jurisprudence."

The Publicity Department of Conquest, Sask. Community Club is seeking a dentist.

The Dental Association of New South Wales, Australia, insures its members against accident to the amount of \$2,000 for \$5.00 per annum.

Dr. Alward, dentist, was elected mayor of Prince George the latter part of last week, defeating his opponent, W. Ogilvie, barrister, by over one hundred majority.

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## The Ontario Dental Society

The annual meeting of the Ontario Dental Society, which has just closed, will stand out as one of its most noted gatherings. The attendance and enthusiasm far exceed any former efforts. The organization and arrangements reflect great credit on the executive officers of the Society.

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## Dental Service Department

### *Question*

Dear Doctor:

I would appreciate it if you could give me any suggestions for treatment for following case.

Patient, five years of age with two permanent teeth erupted, both lower first molars, all other temporary teeth in splendid condition. The newly erupted molars are poorly developed and small, and there appears to be no enamel on same except at four points where small cusps have developed, the remainder of the occlusal surface is comparatively soft and decay appears to be commencing.

I have treated this case with ten per cent. silver nitrate solution.

*Answer*

I think if you would cauterize the surface of the tooth with nitrate of silver as you have been doing and then fit a celluloid cap and fill it with a good copper cement and press it to place it might protect the tooth for some time. The difficulty will be to get it to bear the occlusion.

*Question*

Dear Doctor Webster,—I am sending under separate cover a pair of plaster models, on which I have marked in red some work I did 15 months ago. All except the left lower first molar are silver amalgam fillings, the molar I used Caulks cu. cement, because of the advanced condition, but this has rapidly washed away. I have also marked in black where cavities are now.

This patient is a girl, 10½ yrs. of age, and has the development of a girl of say 14. She is 5ft. 3in. tall, weight 118 lbs. Her parents I may add are abnormally large individuals. This girl lives on a farm and has a fairly normal diet, has always been fond of milk, does not have much candy, in fact rather less than the average child the last 15 months. She is very fond of potatoes, the rest of her diet seems as normal as one could wish. She is a perfect picture of health. When I first saw her she had paid little attention to brushing her teeth, but I have insisted that she do this carefully, and she has done very well. When I saw her first 15 months ago around all the anteriors labially at the cervical was the customary green stain, in fact, it had eroded the enamel. I went over these with disks and a porte polisher, and improved the condition a good deal. Now there are two definite cavities on the lower cuspids.

I realize that this is a very busy time Doctor, with you, but if you can spare me a little time I shall be extremely grateful.

I had thought of writing to Dr. Husband, asking him to prescribe a diet if possible, or have him set me a chart that I could fill out, and then he could fix a diet. In fact I would like very much to be of some use in this case. What should I use for fillings Doctor, in the present cavities? Would it be possible or advisable to try cements again hoping that they might last until the patient was a little older?

I shall mark the above case No. 1.

I am also sending a plaster model of a man 20 years of



age with an unerupted upper cuspid, as the enclosed x-ray will show. He has no discomfort, though at times he feels a slight soreness, perhaps once every six or eight months but it only lasts for a day or so. Would you advise the removal of the cuspid. The bicuspid has a small area which may cause his trouble. The crown has been on for five years.

*Answer*

I have gone over your case one carefully and have determined that there are five factors in this case and their importance are in the following order:

Oral Prophylaxis, Oral Hygiene, Diet, Mastication, and Fillings.

My conviction is that you should give every surface of every tooth a thorough Prophylaxis and after instruction in Oral Hygiene she should be seen at least every two weeks for inspection and prophylaxis of such surfaces as cannot be reached by the tooth brush, mastication and massage.

I would suggest in addition, reducing the starch in the diet and increase in food requiring thorough mastication. It is understood of course, that all mechanical operations to preserve the teeth and their contact shall be made.

As to case number two, unless there are more symptoms than are indicated in your history I would not be inclined to undertake any surgery but if the cuspid begins to cause absorption of the roots of the other teeth then it might be removed or the crown uncovered which in many cases permits an impacted tooth to erupt.

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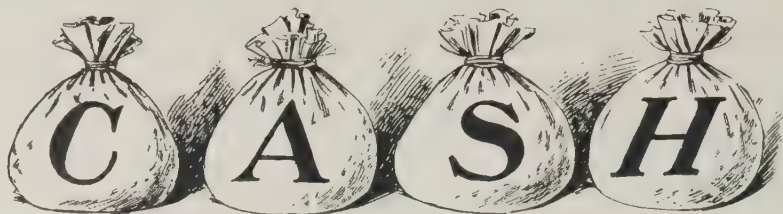
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# Dominion Dental Journal

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## Three Case Histories

*R. C. McCutcheon, D.D.S., Highgate, Ont.*

In this connection I desire to present three case histories together with X rays and reports.

### *Case Number 1*

Patient Mr. X, age 69, came to office Feb. 22. Edentulous several years, had developed neuralgia and soreness on left side of face, pain centering in cuspid region. Had been treated by dentist and physician, X-ray taken. Report: "the film shows a root fragment or a sequestrum of bone at the site of the discharge of pus," and patient referred to dentist in near-by city for treatment. Operation had been performed to remove sequestrum shown in X-ray. No relief of symptoms, wound still open and discharging slightly.

Examination showed:

(1) Sequestrum shown in X-ray artificially produced by Roentgenologist.

(2) Small probe would pass through wound into antrum.

(3) Tenderness over left antrum.

(4) Pus present in left nostril under turbinate bone.

(5) Transillumination suggested trouble on left side.

Diagnosis—Infected antrum.

Treatment—Under conductive Anaesthesia fairly large opening was made through canine fossae into antrum which was found to contain a large amount of bloody pus. This was washed out thoroughly and an iodoform gauze drain placed in opening, dressing was changed and antrum irrigated daily, opening gradually closed and after one month's treatment was completely healed. It is now one year and ten months since treatment was completed. Patient has had no recurrence of trouble.

*Case Number 2*

Patient, Mrs. X, age 74, came to office Nov. 6, 1922; large swelling on buccal of upper ridge left side extending into break in upper denture from cuspid to molar region. Complained of severe neuralgia, catarrh and halitosis. Had been edentulous 20 years.

Treatment—Swelling seemed to contain pus, but on opening no pus was found and patient got no relief. Advised to discontinue wearing upper dentine. Section taken from beside established fistula and sent to "Institute of Public Health," London, Ontario, for examination. Report stated that condition was simple chronic inflammatory reaction with no evidence of malignancy. Patient referred to physician for X-rays and consultation; X-ray of area showed small root fragment and considerable necrosed bone. X-ray of accessory air sinuses showed pus in left antrum and left frontal sinus. It was decided to remove root and necrosed bone thereby establishing drainage of antrum.

On December 16, 1922, this was done with assistance of physician who administered ether. Antrum contained a great quantity of pus of a very disagreeable odor. This was washed out and iodoform gauze used as dressing. Entire floor of antrum was found to be necrosed, and was easily removed. A section of tissue from antrum was again sent to Institute of Public Health and report received December 20th stated that condition was Adeno-Carcinoma. Patient was at once referred to prominent surgeon, who, after examination, stated that he could find no evidence of carcinoma, and thought condition was a chronic antrum which would heal rapidly with use of . . . . . therapy X-ray and irrigation. Patient returned home after remaining in hospital one week. X-ray treatment and irrigation were continued and antrum closed nicely except small opening maintained for irrigation.

Shortly after this unmistakable signs of carcinoma appeared. Entire left side of face was involved and became swollen. Radium was used. Patient died December 17, 1923, more from lack of nourishment and advanced age (in 76th year) than from effects of carcinoma.

Case Number 1 and Number 2 were husband and wife.

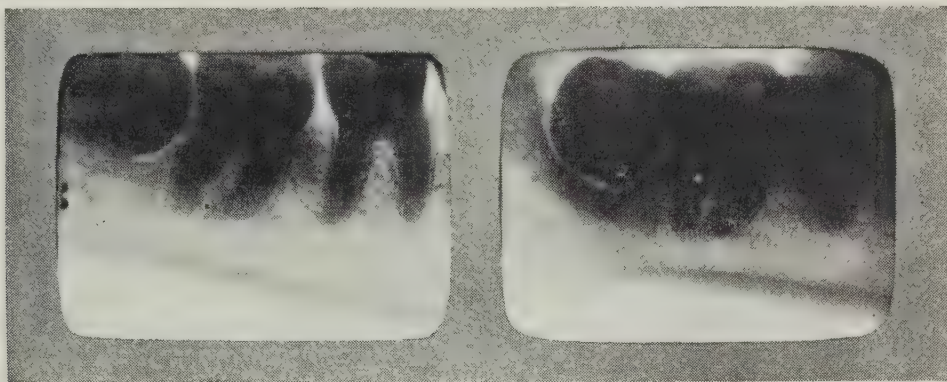
*Case No. 3.*

Patient, Miss X, age 22, forced to resign position as school teacher on account of ill health.



General condition poor, considerable loss of weight, focal infection suspected by physician. Tonsillectomy and Appendectomy caused no improvement. Severe ear ache in left ear unsuccessfully treated by specialist for six months.

Condition of teeth—Three small cavities, slight gingival irritation, all vital and in position except lower left third molar, showing no signs of its presence and causing no local discomfort.



See illustration. X-ray of mastoid by physician. Mastoid findings negative.

Third molar, removed under Conductive Anaesthesia, found tightly locked against distal of second molar and showing evidence of infection.

Ear ache entirely disappeared and in two months patient had regained former health and weight, and was again able to resume professional duties.

## Diet

*Read Before the 19 Club, Toronto.*

*L. D. Drew-Brook, D.D.S.*

There is a book—The Science of Eating, by Alfred W. McCann, which I would strongly advise all to read and from which I have written this paper. The whole of it is intensely interesting, and to quote McCann himself, it tells why whole grains, finely ground, containing all the mineral salts and vitamins with which God has endowed them, should replace in our diet, not only for their superior flavor, but for what they mean to life and health, the refined, sifted and bolted cereals and breadstuffs upon which we feed; why every ripe fruit that grows should be popularized in the home; why vegetables and greens should receive ten-fold the attention they now enjoy; why the waters in which vegetables are cooked should not be discarded, but rather why they should be served in the form of soups or sauces; why less meat and more milk should be consumed; why all meat should be sterilized and milk pasteurized; why butter is superior to all other forms of vegetable or animal fats, and why it too, as well as ice cream should be pasteurized, why milk and meat should not be consumed at the same meal, and why young children should not eat meat at all; why meat should be accompanied always, with an abundance of vegetables, and why no child or adult should pass a single day without consuming fruit in some form, even though it be but dried fruit such as raisins, dates, figs, prunes, dried apples, apricots or peaches; and why sun-dried fruits should replace the sulphur-dried products of the market place; what eggs mean to the diet, and how to prepare for home use the unrefined grains in all their delicious combinations of whole meal breads, muffins, biscuits, cakes, porridges, and puddings to which they so marvellously lend themselves, not only at home but in the restaurant; why refined sugars, such as granulated cane and beet sugar, glucose syrups and candies should be consumed in ever lessening quantities, while the natural sugars, such as unsulphured brown sugar, old-fashioned cane syrup and honey should be consumed instead; why bakery powders should be sparingly used, why artificial colors, chemical preservatives and chemical adjuncts such as sulphite, alum, saccharine, sodium benzoate, and the whole coal tar scheme should be rejected. Tonight let us consider very briefly just a little of all this.



The food minerals and vitamins upon which life depends must be in the food man eats, that his body may take them from that food.

All food contains them until man removes them. Consumed for a few months, food deficient in some of these building materials gradually affects health. Animals, fed upon food from which any of the food minerals are artificially removed, perish.

In the case of a calcium deficiency for instance, the body goes to the only available source of calcium supply, the lime of the teeth and bones; that lime is gradually consumed until, weakening the structure of the teeth, it leaves finally but a shell of enamel over a honeycombed structure, thereby opening an avenue for the entrance of putrefactive bacteria which begin the work of true decay. The ruin is really accomplished long before any evidence of decay is disclosed.

Calcium is necessary for the strength of the bones, for the hardness of the teeth, for the firmness of the muscles, for the coagulation of the blood on demand, for every pulsation of the heart, for the digestion of the food, for the functioning of the kidneys and other vital organs, for the health of the body.

Of the solid matter found in the human body about one-fifth is made up of the minerals—iron, calcium, phosphorus, potassium, magnesium, manganese, sodium, sulphur, silicon, fluorine, iodine and chlorine. All have essential functions to perform.

It is not any one of the elements of known or unknown nature to be found in natural foods, however important in itself, but the combination of all of them, which is essential to health and longevity, they all work together, yet from practically all of the wheat, iron, barley, rye, rice and buckwheat, consumed by human beings on this continent three-quarters of all of the mineral salts and colloids (resembling glue) all of the ferments, enzymes and vitamins are removed by denaturing processes.

Wheat is washed, screened, sifted and bleached to make white flour, rice is brushed, scoured, polished and sometimes talcumed, corn degenerated, barley pearled, rye refined.

It is folly to compare the digestibility of white patent flour with the indigestibility of whole wheat. Bran, the manufacturers state, is indigestible, therefore ought to be removed. Complete absorption means constipation, absence of cellulose and fibre means constipation. Bran takes up moisture and holds

it in the intestines making thereby the intestinal mass more elastic, stimulating peristalsis, and increasing the rhythmic waves of contraction and relaxation, so necessary to the process of elimination. Bran surrenders to the body the solubles it contains, these solubles physiologically active are absorbed to perform the metabolic tasks assigned them and bran is but one of the discarded particles of wheat, corn, rice, etc. It, itself, is not a food, it is merely a natural constituent of the grain.

Meat alone will not supply the needs of the body, as has been shown by feeding young dogs on meat and fats alone. A condition resembling rickets in children was brought about, which was quickly cleared up by feeding pulverized bone. I do not mean to say that meat should be excluded from our diet, there are times when meat is valuable, provided it is cut from a healthy carcass and none of its extractives are lost in cooking. Yet we should remember that catarrh, rheumatism, blood diseases, and many other physical disorders cannot be cured where meat is consumed in excess. When we eat the flesh of an animal we eat the end products of the animal's life processes; uric acid, animal sweat, dead cells, toxic waste, etc. When we eat whole grains, legumes and milk, the nitrogen supply is even greater without the urea and other poisons.

In comparing the merits of a heavy flesh diet with a diet of whole grains, eggs, milk, we stumble into another point of great interest. For every pound of beef consumed by man, ten pounds of corn are necessary to produce that pound of beef. A pound of beef will partly support a man for a given length of time; but the same quantity of corn necessary to yield that pound of beef will support ten men for the same length of time.

We know that a meat diet tends to acidify the blood and that man's only defence against the attacks of disease is based upon normal alkalinity of the blood. In freezing meat for storage purposes the liquid constituents of the tissue cells expand. The expansion ruptures the cell walls. When the meat is thawed by the retailer the cell juices flow through the broken tissues and escape. Frozen meat after thawing putrefies rapidly.

No meat should be consumed raw for the reason it may infect the consumer with tuberculosis and other diseases.

The heat ordinarily employed in cooking a roast of beef does not sterilize the lymphatic tissues which lie deeply imbed-



ded. Thus, if the animal is tubercular the glands are always affected even though no other lesion is found. In milk the germ of tuberculosis is killed by heating to 145° F for 30 minutes, but meat is a very poor conductor of heat. If the interior of a roast retains much of the blood red of raw meat you can be sure the temperature has not been high enough to destroy any germs present.

Milk is a perfect food, the cheapest of all animal foods. It has been demonstrated that the crops produced from an acre of cultivated farm land will yield but 14 lbs. of poultry and eggs, and 72 lbs. of milk estimated on a protein basis. It is thus seen that a quart of milk is a greater food asset than an amount of meat furnishing the same amount of protein. Although milk is very beneficial, it is also a treacherous enemy unless great care is taken of the animal's health, cleanliness of the hands during milking, clean pail, milk chilled immediately, then pasteurization to prevent the growth of microorganisms. Milk being such a perfect food for humans it is also a perfect food for bacteria, hence we find such organisms as spread the following diseases, tuberculosis, diphtheria, septic sore throat, typhoid, etc. Unlike eggs, meat, poultry and fish, milk cannot be stored in refrigerators for a year, it cannot be held for speculation, it cannot be refined as wheat, oats, corn, rice, barley and sugar are refined. It brings into the home all the food substances in abundance except iron. Iron is found only in comparatively small amounts, though sufficient for a child up to one year of age, but thereafter it requires more iron, which unhappily it does not receive from white bread and sugar.

Mr. McCann writes a very surprising section headed "The Mysteries of Food." Practically all dried fruit, he says, is outraged by treatment with sulphurous acid, yet sulphurous acid in food produces serious disturbances of metabolic functions, it adds an immense burden to the kidneys, it impoverishes the blood in respect to the red blood corpuscles.

Bakers can use rotten eggs in making cakes, putrefaction odors are volatilized in heat of the oven and driven off. It is estimated by the food laboratories of the United States that 50 million dollars annually are spent on rotten eggs. Extraordinary caution is used by the industry to avoid detection. Chapters are devoted to bakery wonders. A label adequately describing some of the cakes now on sale would read:

This Cake  
contains

Wheat Flour

Corn Syrup

Uncertified casein

Chinese Egg Albumen

Eggo Substitute

Coal Tar Yellow

Alum. Sugar

Vanallin

Tonca

Water

This then like all other articles on the subject of eating has been a plea for use of natural foods. One cannot study the history of various diets, fatal and otherwise, and not be convinced that our meals to-day are composed mostly of what they should not be.

### MILK AND TEETH

Editor's Note—The following query and answer is reprinted from a recent issue of the Public Health Bulletin, Toronto, and adds interestingly to what has already been said about diet:

Q.—We have been reading a good deal recently about the value of milk and the development of the teeth. What about this?

A.—For generations the medical profession has known that defective or arrested bone development in the case of rickets was due to some deficiency in the diet, the lack of vitamins and of calcium and phosphorus, and that this condition could be corrected by the continued use of cod liver oil and milk, and also eggs. However, it is only in recent years that we have learned that cod liver oil and cream are two of the most valuable sources of the anti-rachitic vitamin. Children suffering from rickets invariably have defective teeth and while it is only recently that attention has been drawn to the role played by milk in the proper development of the human teeth, it is a well recognized fact that the nations that have the best teeth and the best bone development, in fact the best physical development, are the nations whose principal industry is dairying, where they have had an ample amount of milk and dairy products. It must be apparent that the conditions that prevent the development of rickets and correct these conditions after they first make their appearance, play quite as important a role in the development of the teeth and in the preservation of the efficiency of those teeth once they are developed. The permanency of our teeth depends in a large measure on the outside coating which is usually referred to as the enamel, and which is dependent



for its construction on lime and phosphorus. Therefore, the food that contains an ample supply of lime and phosphorus is the best precautionary measure we can possibly take in securing sound teeth and maintaining them in a sound and fit condition, and it is well to bear in mind in this connection that if we are going to get the full benefit of milk in the development of the teeth, that milk must be taken freely by the expectant mother. The expectant mother should take at least a quart of milk a day, in addition to her other food. This will ensure a proper start of the teeth in the jaws of the infant at birth and also ensure the proper bony development of the child generally.

Furthermore, in addition to the advantages already referred to, that milk possesses over all other foods, and also its economic advantages, there is still another important factor bearing on the nutritive value of this article of diet, and that is that the protein or muscle-forming portion of the milk is in such a form as to be more easily assimilated than is the protein of either meat, peas, beans and that obtained from vegetables of all kinds. In fact, from 95 to 100 per cent. of milk protein is absorbed and it further possesses the advantage of being capable of being stored in the body for future use.

The fat of the milk is in the form of an emulsion, and is consequently much more readily digested and assimilated than in any other form of animal fat. Milk is a natural emulsion, the oil being held in suspension in very minute globules.

The carbohydrate which is the sugar in milk, is also easily digested, not requiring the action of saliva, the pancreatic juices or the gastric juices, as all other starchy foods do.

The lime and phosphorus of milk, which are so very essential for bone formation, growth and development, are present in such form as to be very readily and fully absorbed.

Iron, although in small quantities in milk, is in a form that is practically all assimilated.

In fact, so important is milk during the developmental period of our boys and girls that if every boy and girl in Toronto were to take one quart of milk every day we would reduce our number of under-developed or under-nourished children at least fifty per cent. within one year, providing, however, that any physical abnormalities such as enlarged tonsils, adenoids or defective teeth had already been corrected.

## Suggestions for the Conduct of Public Dental Service for Children

*A. E. Webster, D.D.S., M.D.S., M.D.*

This article does not pretend to be a treatise on the care of children's teeth, but only hopes to give direction to the work.

Whatever the public knows of Dentistry has come from the dentists. Out of this teaching there is an ingrained notion that children's teeth need no attention other than extraction. Dental officers often find this an obstacle to successful dental care of the young.

It is well nigh impossible to lay down rules of procedure or practice that would be suitable for all forms of dental hospitals or school clinics. The equipment, the age of the patients and the number to be cared for must largely govern the procedure. Fortunately dental practice for the young especially gives full value for whatever effort is put forth. Teeth will last long or short depending upon skill, conscientious effort and care, with which they are treated. In most clinics, all cannot be treated, so the greatest good must be done for the greatest number. Long or tedious treatments cannot be undertaken no matter how desirable if by so doing several other teeth are lost for the want of care. Experience must be the guide for every clinic and for every clinician as to what teeth must be extracted, filled or treated. In some clinics, no deciduous teeth are filled, in others neither permanent nor deciduous teeth with non-vital pulps are treated, in still others no pulps are devitalized, while few, if any, do orthodontia.

*Examinations* should record anatomical defects and deformities, accidents, deficiency or excess of teeth, malocclusions and pathology of the teeth, jaws, gums and mucous membranes.

*Cleft Palate and Hare-Lip*: Advise the parents or guardians to see a good surgeon who makes a specialty of such work, especially one with a dental training.

*Retarded Eruption of Babies' Teeth*: If unduly late advise consulting the family Physician.

*Diseases of Dentition. (So called)*: After consultation with the family physician, it may be found desirable to lance the gums.

*Defective Enamels*: In deciduous teeth, apply nitrate of silver direct with pencil (lunar caustic) 40% solution on cot-



ton wool. In permanent teeth, grind off the rough cusps in molars, repair with copper amalgam and repair incisors with silicate only removing such decay as is necessary. Later when the child is older and the pulp receded, a more permanent operation may be made.

*Deformed and Excessive Numbers of Teeth:* A peg shaped tooth appearing in the upper mid line must not be mistaken for a peg-shaped lateral. A supernumerary tooth should be removed. Occasionally a normally formed tooth is so misplaced that extraction is advisable.

*Lacking teeth* is a rare condition in the deciduous set. Not unusual in permanent. Missing teeth are Laterals, Lower Second Bicuspids and Third Molars. If there is doubt, have X-ray pictures made before extracting.

*Malocclusion:*

An early diagnosis is desirable because the correction of a bad habit may prevent its progress. Records might well be made of the condition of occlusion in suspicious cases.

*Bad Dental Habits of Children:*

Sucking the tongue, the lips and fingers. Biting nails and lips. Sucking food and not chewing. Bolting food. Protruding the lower jaw. Avoiding sore teeth in mastication.

*Accidents:*

(a) Fractures of enamel exposing dentine, smooth and polish.

(b) Deep into dentine. Cover with cement, pulp may die. Leave permanent filling to be done months later.

(c) Exposed pulp. Cap if small.

(d) If pulp must be devitalized and the root end not closed, failure is likely.

(e) If the root end closed and tooth split more than four m.m. under the gum or the root fractured, extract.

(f) Tooth dislocated—disinfect, remove the pulp and replant. Fractured deciduous teeth involving the pulp, might better be extracted. Dislocated deciduous teeth should not be replanted.

*Defects in pits and Fissures:*

If beginning caries is imminent, Nitrate of silver followed by red or black oxy-phosphate of copper, squeezed into the fissures with the finger.

If decay has begun it should be cleared out with hand in-

struments and the cavity filled with copper amalgam. Better not use copper amalgam or cements on proximal surface cavities if the full width of the tooth is to be maintained.

#### *Order of Dental Operations:*

Patients who have been regularly attended in the clinic and have no pain should have those operations begun which are going to take the longest time.

Unless a careful plan and sequence of operations is laid out, much time will be lost.

Complete operations in as few sittings as is consistent with proper care of the child.

Former operations and effect of oral hygiene should be observed. It might be well to have a large hand mirror so the child can see for himself what his teeth look like.

#### *Patients' First Visit, and those suffering pain.*

- (a) Relief of pain.
- (b) Talk about teeth and food, and how to chew.
- (c) Tooth brush and brushing.
- (d) How to brush the teeth.
- (e) Prophylaxis.
- (f) Extractions.
- (g) Treatments and after care of extractions.
- (h) Fillings.

Special care should be taken to prevent decays on the distal surfaces of second temporary molars, lest the first permanent molars drift forward as well as the mesial surface becoming carious.

#### *Diagnosis of Pain:*

Pains in young patients are most commonly caused by infection and trauma.

Infection of pulps is usually direct from the mouth through a cavity in the tooth. The peridontal membrane is infected from a dead pulp.

The pain of pulpitis comes on suddenly and is intermittent, while the pain of peridontitis comes on more gradually and is persistent.

In pulpitis the peridontal membrane is not likely to be sore while in peridontitis the membrane is sore, the tooth elongated and some swelling or soreness on palpation over the root. Pressure is the cause of the pain in each case. This may be relieved by local anaesthesia depleting the part by counter irritation or blood letting or lowering the general blood tension.



*Relief of Pain: Pulpitis*

Remove as much decay as possible without pain.

Apply cloves and phenol on cotton, if the pain is not relieved in fifteen or twenty minutes it may be necessary to open the pulp chamber where cocain may be applied.

*Peridontitis:*

Drainage, counter irritation, protect the tooth from occlusion by cement on the crowns of other teeth. Internal remedies,—Aspirin, etc., extraction and lavage.

*Pain from Trauma:*

Cold application at first, warm applications later.

Put the parts at rest.

Counter irritation.

*Tests for Vital or non-vital pulps:*

History of accidents or dental operations.

Color.

Response to heat or cold applied to the tooth.

Sensitive or non-sensitive dentine.

Faradic current.

Peridontal membrane slightly sensitive if pulp is dead.

Power of mastication is greater on vital teeth.

*Indications for Extracting Sound Vital Teeth:*

1. When the regular time for the physiological loss of the tooth has arrived, as indicated by the age, size and development of the child. The progress in the loss and development of other teeth is an aid in determining when to extract.

2. If the crown of a tooth whose roots are absorbed is wedged tightly between two other teeth and is interfering with the development of normal occlusion.

3. If there is evidence that absorption of the root is not taking place and the time has arrived for the permanent tooth to appear and the presence of the latter in the process is known.

4. Though the deciduous tooth is not loose, it should be removed if the permanent tooth is coming in malposition.

Note:—A child should be encouraged to loosen and remove its own deciduous teeth, but if a tooth becomes malposed or sore to bite upon, it should be removed at once.

Premature and meddlesome extraction should be avoided.

Be prompt to assist and guide nature, but do not meddle.

*Indications for Extracting Diseased Teeth:*

*Pulpitis*:—Extract in cases of pulpitis any time within eighteen months of the normal time for the loss of the tooth

except the anterior teeth and the first temporary molars which might be removed at an earlier date.

*Infected Pulpless Teeth:*

All infected pulpless teeth, whether paining or not, should be extracted with the possible exception of the second molars and cuspids.

Teeth which can only be kept comfortable by leaving open cavities in the crowns or drainage through a sinus or puncture into the pulp chamber through the root, should be extracted. Deciduous tooth roots which have been the seat of an acute inflammatory process do not absorb normally and should be removed at the proper time to make way for the permanent teeth to follow.

*Indications for Capping Exposed Vital Pulps:*

- a. Accidental non-infected small exposures.
- b. Recent exposures from decay may be capped sometimes.

*How to Cap a Pulp Exposure:*

Accidental small exposures.

If blood absorb with spunk. Apply direct to exposure with small burnisher or wire loop made from a broach, a paste of oil of cloves and oxide of zinc. Cover this cement without causing pressure. If no discomfort, the surface of the cement may be removed and a more permanent filling inserted at a later date, if found possible or convenient.

*Exposures from Decay:*

(a) First Method—

*First Sitting.* Remove decay. Wash out with tepid water. Dry. Apply a paste of oxy-sulphate of zinc and oil of cloves.

*Second Sitting.* If all decay removed at first sitting, then only remove enough filling to make permanent operation.

(b) Second Method—

*First Sitting.* Remove decay. Apply Dakin's solution or cloves on cotton, seal with cement.

*Second Sitting.* Remove dressing. Apply oxy-sulphate and cloves paste, cover with cement. If pain, pulpitis or infection follows, extract.

*Lining of Deep Cavities:*

Remove decay. Rub bottom of cavity with nitrate of silver pellets. Apply a varnish or soft cement. Make permanent filling over this.

*Devitalization of Pulps:—*

*Where Arsenic May be Used:—*

1. Not until two years after the eruption of a tooth.



2. Not within two years of the time of the loss of a tooth.

Arsenic may be used between these periods.

A very small quantity of arsenic should be used, and not allowed to remain in place for more than twenty-four hours, better less. In all other cases use novocaine or phenol and pressure or nitrate of silver. In partially dead pulps, or cases where all the tissue is not removed, use Howe's silver nitrate solution "A" followed with formaldehyde, and fill canal with an antiseptic root canal filling. It is always unwise to fill a root canal at the same sitting that strong irritating drugs are used.

#### *Treatment of Infected Teeth:*

Infected pulpless deciduous second molars and cuspids should under favourable conditions be treated if there be no contra-indications of general health or loss of peridental membrane.

The cavity should be opened freely and washed thoroughly with water. Tri-cresol and formaldehyde sealed in the cavity if there is a wet canal. If dry, use oil of cloves, camph phonique or cresol. If there is no trouble at the end of two or three days, the canal should be cleaned out as carefully as possible and filled with an antiseptic root canal filling, sealed with oxychloride and cement. The crown filled with amalgam. If acute pain occurs the tooth should be removed.

#### *Abscess With a Sinus:*

If a second molar or cuspid develops an abscess with a sinus, open the cavity freely, wash water through with an abscess syringe or from moistened cotton covered with raw rubber. Follow this with Beck's Bismuth paste and fill the crown with cement or amalgam.

#### *Indications for Extraction of Permanent Teeth:*

1. Extract every tooth from which infection cannot be removed and the tooth made comfortable and useful.

3. Extract every tooth with pulpitis whose pulp cannot be removed and the canals properly filled as may occur because of position, location of the tooth, or because of anatomical form.

4. Extract every tooth which is the seat of acute apical peridontitis or peri-apical abscess if the pain is intolerable and cannot be otherwise relieved, or if there are grave

systemic symptoms or if there is reason to believe that there is such a destruction of the peridental membrane that the tissues will not return to a normal condition.

5. Extract every tooth root which has been the seat of one or more acute infections or a chronic infection extending over some years which has detached any considerable portion of the peridental membrane or rendered the tissues of the root dark or grey in color.

6. Extract every tooth from which there has been lost by disease a half of the peridental membrane, beginning at the apex.

7. Extract all teeth with exposed pulps, infected teeth or paining teeth for patients suffering from syphilis, tuberculosis, endocarditis, general septicemia, severe arthritis, severe anaemia or diabetes. Extract every tooth with a dead and infected pulp whose root end is not normally closed, except upper incisors.

#### *Extraction of First Permanent Molars:*

If the deciduous teeth are in place and will hold the bite in normal separation, and the second molars have not erupted and two lower first molars and one upper first molar must be extracted then remove all four or if two lower first molars are to be lost remove all four, but if two uppers are to be lost do not extract the lowers. If two molars on the same side must be extracted do not extract the teeth on the other side but if a molar on the lower left side must be lost and one on the upper right side, extract all four. If the only teeth keeping the bite open are first molars, retain them until the bicuspids or the second molars come into normal position then determine whether to extract or not.

#### *(2). Indications for Capping Exposed Vital Pulps:*

1. It is desirable to cap the pulps of teeth whose roots are not yet fully developed.

2. It is often desirable to cap the pulps of teeth in patients who are very young, very old, enfeebled by disease or pregnancy.

3. Small traumatic exposures of less than half a m.m. in area.

4. Exposures made in attempts to remove decayed tissue may sometimes be successfully capped after disinfection.

#### *(3). Indications for Devitalization of Pulp:*

1. Paining Pulps—

a. If pain is started by heat and relieved by cold.



b. If pain is due to infection and has lasted for over an hour, especially at night.

c. All exposed pulps where capping is not deemed advisable.

## 2. Non-paining Pulps—

a. In rare cases for prosthetic purposes.

b. Known pathological pulps which are liable to acute infection or extension to alveolar tissues.

c. All exposed pulps where capping is not deemed advisable.

## 4. *Methods of Devitalization in Order of Preference:—*

(a) Absorption Anaesthesia.

(b) Infiltration Anaesthesia.

(c) Pressure Anaesthesia — hand pressure or high pressure.

(d) Intraosseous Anaesthesia.

(e) Conductive Anaesthesia.

(f) General Anaesthesia.

(g) Poisons—In certain cases where it is not expedient to use any of the above methods, a small quantity of arsenic may be applied to vital dentine and sealed in for twenty-four hours.

Other poisons, such as phenol, mineral acids, Howe's silver nitrate solution A, or sodium and potassium may be used to advantage in dealing with partially devitalized pulps.

No devitalization or root treatment to be attempted unless canals can be kept dry during treatment.

It is highly desirable that the tissues filling the funnel-shaped opening at the apex of the root of a tooth should be kept vital. Therefore care must be exercised to avoid passing broaches or drugs through apical openings.

## *Infected Pulp Canals of Permanent Teeth:*

The physical condition of the patient and the peridontal membrane determine what treatment should be applied to infected permanent teeth.

Young patients in good health whose root canals have not been long infected, and the apex normally closed should receive conservative treatment.

The regular medical treatment of root canals will usually succeed if the peridontal membrane is not detached from any considerable portion of the root. An X-ray picture is of assistance in making a diagnosis of the condition of the peridontal membrane.

Molars and lower teeth with much peridontal destruction should be extracted. Single rooted upper teeth may be treated medicinally for a week or two and if after a test filling of a month or more there is remaining moisture odor, swelling or pain surgery should be invoked.

*Surgery of Root ends of Upper Single Rooted Teeth.*

(a) If the peridontal membrane is little if any involved make a sinus and treat as such.

(b) If the membrane is not much if at all involved but an area about it is involved as may occur in cysts, granulomata or chronic abscesses these should be curretted.

(c) If the root end is roughened it should be smoothed off with files, burs or stones, the canal washed and disinfected root filled and opening in the gum allowed to heal.

(d) If the end of the root has been stripped of membrane this portion should be removed.

The success of both medical and surgical treatment of infected roots of teeth depends largely upon a correct diagnosis, careful treatment and subsequent trauma.

*Alveolar Abscess with a Sinus:*

If the root end is not deeply covered with bony tissue, a Sinus forms without much destruction of the peridontal membrane and can be treated with prompt success, but if the sinus only formed after much pain and severe swelling, the chances are there has been much involvement and treatment is not so simple. In most of these cases surgery is necessary.

Much as a truly conscientious dentist in public service dislikes to remove a tooth for a young patient yet he may find it necessary to do so in the interests of many others who demand his attention where ten teeth can be preserved in the time it takes to treat one.



# Dentistry in Great Britain

*(Continued from the June Issue)*

## *Part I.—General Surgery and Pathology.*

(5) This examination is partly written and partly oral. Synopses are appended.

(6) Candidates must give twenty-one days' notice in writing of their intention to present themselves for this examination, and at the same time forward certificates—

- (1) Of having attended at a recognized medical school:—
  - (a) A course of instruction in Surgery during two terms.
  - (b) A course of instruction in Medicine during two terms.
  - (c) A course of instruction in General Pathology (including Bacteriology) during two terms.

*These courses of instruction must be attended after the completion of the courses in Anatomy and Physiology.*

- (2) Of having acted as surgical dresser in the out-patient department of a recognized hospital for three months.
- (3) Of having attended, at a recognized hospital or hospitals, the practice of medicine and surgery, including clinical lectures, for twelve months.
- (4) Of being 21 years of age.

(7) Any candidate referred at this examination, who does not hold a registrable dental qualification, will be required before admission to re-examination to produce a certificate of such additional study during three months at a recognized medical school and hospital as the teachers of the school may determine.

## *Exemptions.*

(8) Candidates who are Members of the College, or who have passed the Examination in Surgery of the Conjoint Examining Board in England, or who produce evidence of having passed the Examination in Surgery for a Degree or other Qualification in Medicine or Surgery registrable under the Medical Act of 1886, are not required to pass Part I of the Second Professional Examination.

## *Part II.—Dental Surgery and Pathology.*

(9) This examination is partly written, partly oral, and partly practical. The oral examination is conducted by the use of preparations, casts, drawings, &c. At the practical examination candidates may be examined:—

- (a) On the treatment of dental caries, on the preparation and treatment of teeth by filling with gold or other material, by inlaying or by crowning, and on other operations in dental surgery.

*(Candidates must provide their own instruments).*

- (b) On the treatment of abnormalities of position of the teeth of children.
- (c) On clinical cases.

(10) Candidates must give twenty-one days' notice in writing of their intention to present themselves for this examination and at the same time forward certificates:—

- (1) Of having been engaged during four years in the acquirement of professional knowledge subsequently to the date of registration as a Medical or Dental Student, or of having passed the Pre-Medical Examination conducted or recognized by the Conjoint Examining Board in England.
- (2) Of having attended at a recognized Dental Hospital and School:—
  - (a) A course of Dental Surgery and Pathology.
  - (b) A separate course of Practical Dental Surgery.
  - (c) A course of Dental Bacteriology.
  - (d) A course of Dental Materia Medica.
  - (e) A course of practical instruction in the administration of such Anæsthetics as are in common use in Dental Surgery.
- (3) Of having attended at a recognized Dental Hospital and School, or in the Dental Department of a recognized General Hospital, the practice of Dental Surgery during two years.

(II) Any candidate referred at this examination who does not hold a registrable dental qualification, will be required before admission to re-examination to produce a certificate of three months' additional study at a recognized Dental Hospital.

### SYNOPSES.

#### FIRST PROFESSIONAL EXAMINATION

##### *Dental Metallurgy.*

The physical properties of the metals—gold, platinum, palladium, silver, tin, antimony, mercury, lead, bismuth, zinc, cadmium, copper, aluminium, iron, nickel, viz.: lustre; tenacity; elasticity; malleability; ductility; conductivity for heat and for electricity; fusibility; specific gravity; specific heat; expansion by heat; brittleness; hardness, crystalline character; change of volume on solidification.

Action of air (either hot or cold), of water, of acids, of alkalis and of sulphuretted hydrogen on the above metals and their principal alloys and amalgams.

Effect of exposure of the above metals, their alloys and amalgams in the mouth.

**Gold.**—Preparations and properties of pure gold. Cohesive and non-cohesive gold. Precipitated and spongy gold. Assay of gold. Calculation of amount of base metal to be added to reduce the fineness of gold to a given carat, or of the amount of fine gold or of gold of high carat needed to be added to raise the fineness of an alloy to a given carat. The detection and estimation of gold in alloys. The purple of Cassius. The effect of impurities on the properties of gold. The properties of the alloys of gold. Composition of solders for gold.

**Platinum.**—Preparation and properties of platinum. Platinum-black and spongy platinum. Detection and estimation of platinum in alloys. Alloys of platinum with iridium, gold, silver and other metals. Dental alloy.

**Palladium.**—Preparations and properties of palladium and its combinations with silver, gold and mercury.

**Silver.**—Preparation and properties of pure silver. Assay of silver by cupellation and in the wet way. Preparation and properties of the combinations of silver with copper, gold, platinum and mercury. Composition and preparation of solders for silver Electroplating.

**Tin.**—Preparation and properties of tin. Detection of tin in alloys. Preparations and properties of the alloys of tin. Its combinations with zinc, copper and mercury. Composition and melting-points of readily fusible alloys.

**Antimony.**—Preparation and properties. Properties of alloys.

**Mercury.**—Preparation and properties of pure mercury. Testing the purity of mercury. Vermilion and detection of impurities therein. Preparation and properties of amalgams of the various metals mentioned in this synopsis. Composition and preparation of the principal alloys which have been used for preparing dental amalgams. Methods of testing such amalgams, as to the causes of their change of volume, permanence in the mouth, and change of color. Effects of different metals in these amalgams. Possible action of amalgam fillings on other metals used in the mouth.

**Lead.**—Preparation and properties. Effect of alloying on its properties. Solders and soft soldering.

**Bismuth.**—Preparation and properties. Alloys.

**Zinc.**—Preparation, purification, and properties. Preparation of zinc oxide, zinc chloride, and the various materials for the oxychloride, oxyphosphate and oxysulphate cements. Actions of acids and alkaline solutions on cements in the mouth. Alloys of zinc.

**Cadmium.**—Properties, its advantages and disadvantages in alloys and amalgams.

**Copper.**—Preparation and properties. Effect of impurities on its properties. Alloys. Modes of preparation and properties of copper amalgams. Preparation of Sullivan's amalgam and its modifications.

**Aluminium.**—Preparation and properties of aluminium and aluminium-bronze. Solders for aluminium and aluminium-bronze.

**Nickel.**—Preparations and properties. Alloys. German silver. Nickel-plating.

**Iron.**—Differences between cast iron, wrought iron and steel. Effect of presence of impurities in iron. Hardening, tempering, annealing, and burning steel.

Methods of testing metals and alloys for their various properties as described in the first paragraph.



Methods of testing dental amalgams for changes of volume. Effect of sulphuretted hydrogen, water, air, acids, and alkalis on dental amalgams.

Methods of parting gold from silver; rough tests for fineness of gold alloys (touch-stone); of preparation of gold alloy of required fineness; of recovery of gold from scraps; of preparation of solders for gold; of recovery of platinum and silver from scraps; of preparation of pure silver; of preparation of amalgam alloys containing two or more of the following metals: silver, tin, gold, platinum, copper, zinc; of preparation of readily fusible alloys, containing two or more of the metals tin, lead, bismuth, mercury, cadmium, antimony, and zinc.

Methods of determining melting-points of readily fusible alloys; of preparation of alloys recommended for dies and counter dies.

Description of furnaces and muffles used in metallurgy.

Theory and varieties of blow-pipes and fluxes.

Colouring of gilding gold.

Purification of sweep or lemel.

#### *Anatomy.*

The Bones.—Classification, structure, development, and uses of bones. Identification of the bones (excluding hand and foot). Precise knowledge of the bones of the head and neck.

Joints.—Varieties of joints; structures entering into a joint. Temporomandibular joint; joints of the spine, clavicle and shoulder.

Muscles and Fasciæ.—The naked-eye anatomy of a muscle. Modes of attachment. Relations and actions of muscles of mastication, deglutition, expression, and respiration. The fasciæ of the upper limb and of the head and neck.

Circulatory System.—The heart, its structure; the arrangement of its cavities; valves; relations of the heart. Pericardium. The arrangement of the principal arteries and veins of the body. Position, course, relations and distribution of the vessels of the head and neck.

Nervous System.—Main divisions of the brain. Naked-eye anatomy of the spinal cord, and of a spinal segment with its nerve-roots. Cranial and spinal nerves. General arrangement of the sympathetic nervous system. Course, relations, and distribution of the cranial nerves. The cervical and dorsal spinal nerves. Cervical and brachial plexuses.

Organs of special sense.—The eye: Structure of the eyeball; its vascular and nerve supply; intrinsic and extrinsic muscles. The eyelid: lachrymal apparatus. The nose: nasal fossæ, and accessory cavities. Nasal mucous membrane; vascular and nervous supply. The ear: an elementary knowledge of the external, middle, and internal ear.

The Face and Neck.—Lips, mouth, tongue, salivary glands, palate, tonsils, pharynx, œsophagus. Larynx, trachea, thyroid body, thyro-lingual duct. Cervical lymphatic glands with the areas drained by them. The triangles of the neck with their boundaries and contents.

Thoracic and Abdominal Viscera.—Their structure, general arrangement, and relations. The thoracic duct.

#### *Physiology.*

Histology.—The epithelial, connective, muscular and nervous tissues. The buccal and lingual mucous membranes and the salivary glands.

Contractile Tissues.—Their mode of action and relation to nerves; voluntary and involuntary muscular contraction; tetanus; rigor mortis.

The Blood.—Its structure, composition and uses. Coagulation; arterial and venous blood. The chemistry and combinations of hæmoglobin. The gases of the blood.

Circulatory System.—Mechanics of the circulation of the blood. Blood pressure. The pulse. Structure and mode of action of the heart, arteries, veins, capillaries. General plan of the systemic, pulmonary and portal circulations. Influence of the vagus and sympathetic nerves on the action of the heart and vessels.

Lymphatic System.—General arrangement of the lymphatic and lacteal systems. Structure and function of lymphatic glands and tonsils.

Respiration.—Mechanism of respiration. Principal muscles concerned in tranquil and in forced respiration. Control of respiration by the nervous system. Chemical changes in blood and air. Interchange of gases. Dyspnœa: death by suffocation.

Alimentation. Digestion.—Composition and uses of the various secretions discharged into the mouth, stomach, and intestines. Chemistry of simple foods, e.g., bread, meat, milk; their digestion, absorption, and destination.

Classification of food-stuffs. The muscular and nervous mechanism of mastication, deglutition, peristalsis, defæcation, vomiting.

Nutrition.—General plan and action of a secreting gland, with its nerves and vessels. Secretion and excretion. The liver as a secretory and excretory organ. Glycogen. Metabolism in general.

The Urine.—Its composition; variations in amount and specific gravity. Sources and meaning of its components.

The Skin and its Appendages.—Structure and functions.

Animal Heat.—Maintenance and regulation of animal heat. The normal temperature. Cold-blooded and warm-blooded animals.

Nervous System.—General plan of cerebro-spinal and sympathetic systems. White and grey nerve-matter, and their general disposition in brain and chord. Nerve-centres and their uses. Actions of various kinds of nerves, e.g., motor, sensory, vasomotor. Reflex action.

Special Senses.—Component parts of the eyeball. The eye as an optical instrument. Variations in the pupil; how affected. Reception of an image by the eye. Vision.

Ear.—Its general structure. Mode of conduction of sound-vibrations.

Taste. Touch. Smell.—The special structures for the reception of the impressions for these senses.

The Vocal Apparatus.—The production of voice. Speech.

Development.—An elementary knowledge of the development of the face and neck.

#### SECOND PROFESSIONAL EXAMINATION

##### *Surgery and Surgical Pathology.*

Micro-organisms.—Elementary knowledge of in their relation to pathological processes.

Inflammation.—Causes. Vascular and structural changes. Clinical signs and constitutional symptoms. Terminations.

Boil. Abscess. Carbuncle.

Ulceration.—Nature of process. Chief varieties of ulcers of skin.

Sinus and Fistula.

Gangrene.—Causes. Varieties.

Erysipelas.—Sapraemia. Septicæmia. Pyæmia.

Tetanus.—Causes and symptoms.

Tuberculosis.—Modes of infection. Changes in the tissues. Terminations. General principles of treatment.

Tuberculosis of Lymphatic Glands and of Bone.

Actinomycosis.—Modes of infection. Signs and treatment when occurring in head and neck.

Syphilis.—Modes of infection. Stages, symptoms, and treatment of acquired and congenital forms.

Hæmorrhage.—Varieties. Arrest of hæmorrhage.

Hæmophilia.

Syncope. Collapse. Shock.

Wounds.—Classification. Processes of healing. Treatment.

Fractures.—Causes, varieties, signs and symptoms. Process of union. General principles of treatment. Signs and treatment of fractures of the bones of the face.

Joints.—General signs and treatment of dislocations. Special knowledge of dislocation of shoulder-joint and of temporo-mandibular joint.

Blood-vessels.—Injuries of vessels and their consequences. Atheroma. Calcification of arteries. Causes and chief forms of aneurism. Varicose veins. Thrombosis and embolism.

Nerves.—Results of injury to nerves. Common causes of paralysis. Neuritis. Neuralgia. Special knowledge of affections of the fifth and seventh cranial nerves.

New Growths.—Meaning of terms "innocent" and "malignant." General structure and classification of tumours. Diagnosis and treatment of the more common tumours.

Cysts.—Varieties and classification. Diagnosis and treatment of cysts of the head and neck.

Diseases of Bones.—Periostitis, osteitis, osteomyelitis, caries, necrosis. Symptoms and treatment of diseases of the bones of the face.



Tumours of Bone.

Rickets.—Causes and signs. Changes in bone.

Scurvy.

Surgical Affections of the Head and Neck.—Wounds of head and neck. Cut throat. Foreign bodies in the air passage and in the food passage. Dysphagia. Dyspnoea. Laryngotomy and tracheotomy.

Disease of the Lymphatic Glands in the Neck.

Diseases of Temporo-Mandibular Joint. Closure of Jaws.

Mouth and Lips.—Stomatitis—causes, varieties, symptoms, treatment. Salivary calculus. Ranula and other cysts of mouth. Hare-lip. Epithelioma. Herpes. Syphilis. Tubercle. Nævus. Papilloma. Cancrum oris. Oral sepsis; its influence in the causation of disease.

Tongue.—Glossitis, acute and chronic. Papilloma. Epithelioma. Ulcers. Gumma. Wounds of tongue.

Palate.—Cleft Palate. Tumours of palate. Ulceration. Necrosis.

Tonsils.—Varieties of tonsillitis, diagnosis, consequences and treatment. Chronic enlargement of tonsils. Ulceration of fauces.

Gums.—Surgical affections, causes, diagnosis and treatment.

Maxillary and Frontal Sinuses.—Surgical affections, causes, diagnosis and treatment.

Nose and Pharynx.—Inflammatory affections. Ozæna. Polypi. Foreign body in nose. Lupus and syphilis of nose. Rodent ulcer of nose and face. Epistaxis. Adenoid vegetations.

Parotid and Submaxillary Salivary Glands.—Surgical affections.

Submaxillary Cellulitis.

Larynx.—Scald. Spasm of glottis. Œdematous laryngitis. Diphtheritic membrane in nose, throat, or larynx.

Neck.—Torticollis. Causes of stiff neck. Caries of cervical vertebræ. Cervical abscess. Bronchocele.

Eye.—Conjunctivitis. Iritis. Corneal ulcers and opacties. Ptosis. Strabismus.

Anæsthetics: with special reference to their use in dental surgery. Preparation of a patient for the administration of an anæsthetic.

Artificial Respiration.

*(To be Continued)*

## ASSOCIATIONS

**The Canadian Dental Association, August 4-9**

This the first time the Canadian Dental Association will hold its meeting in British Columbia. The program indicates a full and interesting meeting. The time of year will assure good weather, and the local dentists will assure a good time. Eastern dentists will have an opportunity of getting acquainted with western methods of practice and of conducting a convention, two things which will draw together and help to consolidate the profession. The trip west as arranged by Dr. C. A. Kennedy, Toronto, will be a delight. A personally conducted tour makes travel easy and enjoyable. Eastern attendance will be large.

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The Ontario Dental Association have contributed \$1,000 to the Canadian Dental Research Foundation; \$1,000 to the Canadian Dental Hygiene Council; and \$500 to the Ontario Oral Hygiene Committee for educational purposes.

The Board of Governors of the Ontario Dental Association for 1924 is as follows: Chairman, Dr. F. J. Conboy, Toronto; Secy.-Treas., Dr. John A. Bothwell, 2 Bloor St. E., Toronto; Committee on Clinics: Dr. S. Clappison of Hamilton, Chairman, Doctors Campbell of Galt, Walter Thomson of Hamilton. Committee on Exhibits: Dr. A. Ellis of Toronto, Chairman, W. B. Amy, Toronto. Committee on Publicity: Dr. R. G. McLaughlan of Toronto, Chairman; Drs. W. L. Chalmers of Toronto, J. C. Devitt of Bowmanville. Committee on Entertainment: Dr. Walter Thomson of Hamilton, Chairman; Drs. Winnett of Kingston, R. J. Sprott of Barrie, Percy Moore, Hamilton. Ladies' Committee, Mrs. W. B. Amy, Chairman.

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Dr. John A. Bothwell, 2 Bloor Street East, Toronto, Secy. of the O. D. A. would be glad to receive Associate Memberships (7.50) for the British Association for the Advancement of Science meetings to be held in Toronto, August 6th to 13th inclusive. This membership gives the privilege of attending all meetings, social functions, etc., also a copy of the Proceedings of the meetings.



## **Transportation to The American Dental Association Meeting at Dallas, Texas**

A rate of one and one-half fare on the Round trip Identification Certificate Plan has been authorized by practically all of the railroads of the United States.

These certificates will be mailed to each member of the Association in ample time for the meeting. When properly filled out and presented to the local agent, members and dependent members of their families may purchase round trip tickets, good going from November 6-12 inclusive, with return limit November 20. Pacific Coast points date of sale one day earlier and return one day later.

For the convenience of members a special train has been arranged via the Illinois Central, Missouri Pacific, and Texas and Pacific. Passengers from territory tributary to Chicago will arrive in time to leave on special at 3.00 p.m. on November 7th. Passengers via St. Louis will arrive there in time to leave on special at 10.30 p.m. on November 7th. The special is scheduled to arrive in Little Rock, Arkansas at 8.00 a.m. on Saturday, November 8th. The day will be divided between Little Rock and Hot Springs, leaving that night and arriving in Dallas the following morning.

The present plan includes an automobile ride through Little Rock, followed by a sixty-mile motor trip through the Ozarks to Hot Springs. The Hot Springs Business Men's League expect to entertain the party with a trip about the City and vicinity. Complimentary use of the bath houses and golf course is included.

Old Mexico: The Transportation Committee is working on a ten-day or two weeks' tour of Old Mexico following the Dallas convention. Details on this trip will be covered in subsequent issues.

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## **The Faculty Letter**

The faculty of the Royal College of Dental Surgeons, Toronto, proposes to send out a letter to the members of the profession in Ontario four times each year. The general plan and purpose are laudable and should make an intimate connection between the profession and the teaching staff of the college. Its editor, Dr. W. E. Cummer, has had long experience in editorial work and association with the graduates.

## The Canadian Dental Hygiene Council

This is a new organization the objects of which we publish herewith. Every member of the profession in Canada has been appealed to for support both moral and financial. It is expected to co-ordinate all public dental interests in one organization. The Canadian Oral Prophylactic Association, which has carried on such work for the past twenty years, is lending its services to further this form of public dental service. The oral hygiene committees of all national and provincial societies are expected to co-operate. The public is expected to co-operate. The public is asked to help to promote health through oral hygiene.

### *The Canadian Dental Hygiene Council Object.*

The Canadian Dental Hygiene Council is an organization composed of public-spirited laymen, physicians and dentists, having as its object the promotion and maintenance of a higher standard of public health by preventing the prevalence of dental disease, by means of such as the following:

1—To undertake such measures as may be necessary to prevent, reduce or assist in the control of dental disease, thus establishing a higher standard of public health.

2—To carry on by means of lectures, demonstrations, exhibits, bulletins, the press, and all other proper channels, a public educational campaign concerning the teeth and their care, oral hygiene and the relation between dental disease and systemic disorders.

3—To further the organization of public dental clinics, particularly in schools, hospitals and out-lying districts where regular dental service is not available to the people.

4—To enlist the co-operation of the general public and thus increase general interest in the improvement of mouth conditions.

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The midwinter clinic and meeting of the Chicago Dental Society will be held at the Drake, January 21st, 22nd and 23rd, 1925.

A splendid program is in preparation which will equal, or perhaps surpass, any of the previous efforts of the Society. Of course all members of the Canadian and the American Dental Associations are cordially invited and are most welcome.

The customary reduced railroad rates will be available.

For general information address M. M. Printz, Secretary, 25 E. Washington Street.



# Editorial

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## Self Experimenters with Anaesthetics

Again and again we see repeated cases of death from self experimentation in both local and general anaesthetics. Students are prone to take general anaesthetics so that they may know the sensations the patients go through. This is often done in the absence of another competent person. Such a case is reported from England in recent dental literature. Not infrequently the anaesthetic habit is developed by the simple desire to know the feelings experienced in anaesthesia. Among the worst of these is cocaine. The writer once wondered how certain gas cylinders became empty so soon only to finally discover a student sitting in the dental chair with the gas hard on and profoundly under the anaesthetic. On another occasion he met a noted physician only a block or so from his own surgery completely unable to walk any farther. It turned out that he was experimenting on himself with injections of adrenalin chloride. This was at the time of its first introduction. Many other examples of this self experimentation with new drugs might be cited. While in some cases marked additions to our present knowledge have been made, in most cases little or nothing of value was accomplished. Usually the person who treats himself or experiments on himself has a fool for a physician or experimenter.

## **Dr. Neelands Honored**

One of the faithful attendants at Ontario Dental Conventions was missed from the gathering this year in the person of Dr. J. Neelands of Lindsay.

No one living holds an Ontario L.D.S. with an earlier date than that held by Dr. Neelands, July 23, 1869. While he has been practising Dentistry for 55 years, he has also been an Oddfellow for 51 years and at a gathering in Lindsay early in the spring he was presented with a beautiful and costly jewel emblematic of his long and faithful service in the organization, an honor and distinction gained by very few.

Dr. Neelands' fellow practitioners earnestly hope he may enjoy many more years of association with the members of his profession and of his lodge.

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## **Judgment in Sweetman vs. Law**

A judgment by Mr. Justice Kelly re Sweetman vs. Law. It is almost a year and a half since this case went to trial, and it is only now judgment is handed down. Dr. Law, a dentist of good standing in Toronto, is asked to pay damages and costs to the amount of \$2,300 for negligence and want of skill, not during an operation, but for subsequent treatment. It really was for failure to make a correct diagnosis upon the symptoms which followed the operation.

His Honor makes no comment on the evidence of several prominent surgeons and dentists, and prefers to take that of two general practitioners, who claimed to have had no experience or special knowledge in such matters. It is hoped an appeal will be made and that the protective association of the Ontario profession will lend its good services.

The Judgment follows:

"On 17th October, 1922, plaintiff, an unmarried woman, commenced this action to recover from the defendant, a dentist, damages resulting from alleged negligence in connection with the extraction of two of her teeth. The parties both reside in Toronto. Plaintiff, who at times extending over several years had been treated professionally by the defendant, consulted him on January, 1922; he advised extraction, and thereupon, with her consent, he did extract, having first, with a hypodermic needle, administered a local anaesthetic for the purpose of preventing pain in the operation. It is in respect of the use of the hypodermic needle and the consequences



thereof that the plaintiff's claim of negligence is made. Her allegation is that in performing these services the defendant broke off and left imbedded in the muscles of her jaw pieces of the hypodermic needle and concealed that fact from her; and that trouble and suffering resulted.

"After the extraction plaintiff suffered pain in the right side of the face in the region where one of the teeth had been removed, and about the 24th or 25th January she consulted defendant for the purpose of obtaining his advice and treatment to relieve her from the pain. He pronounced the trouble to be due to the contraction of the muscles and advised massage and application of iodine and hot applications to the painful part. She acted on his advice but without result; the pain continued and her jaws became so much contracted that she was able to open her mouth only slightly. She made further visits to the defendant about January 31st, again between 7th and 14th February, and again later. Her last visit was on June 5th. She says she consulted him five or six times subsequent to January 19th; this is not seriously contradicted. During all this time her muscles were so contracted that she could only partly open her mouth and even that was with difficulty; the pain continued unabated and no perceptible improvement resulted from the treatment which defendant prescribed and she used. Defendant swore that he remembers plaintiff calling upon him three times after January 19th, and says that her last visit preceding that of June 5th was about six weeks prior to that date; and that she always complied with his request to return to him.

"His description of her condition on January 19th and from that date until June 5th, is that apart from the trouble in the region where the two wisdom teeth had been extracted there was nothing unusual in her case; that on her first call after January 19th she complained of trouble in the right jaw which he says, from her description, was trismus—inability to use her lower jaw, contraction of the muscles, inability to open her mouth—consequences of her trouble. He says that in ordinary cases there is no contraction after six weeks—sometimes not longer than two or three weeks or less—six weeks being longer than usual; he agrees that he prescribed local treatment and massage; treatment which he believed to be proper, but which he says was without result in her case as there seemed to be little improvement.

"As to what occurred on June 5th the parties do not agree. Her evidence is that on the morning of that day she called at

his office accompanied by her friend, Mr. Pickles, and asked defendant if he would advise an X-ray examination and that he replied in the negative and advised her to continue the iodine applications. The defendant's evidence is that on that occasion he did not advise against an X-ray examination, but on the contrary, as he began to think there might be some reason for her condition and was desirous of discovering its cause, he recommended that course. Pickles, who says that he heard the conversation between the parties, corroborates plaintiff and says that defendant advised against the X-ray treatment and also advised continuation of the iodine treatment.

"Dr. Harrison, the regular medical attendant of the plaintiff's family, having observed plaintiff's condition of pain and inability to open her mouth which was such that he could put only his index finger into her mouth, advised X-ray examination without offering any opinion as to what was the cause of her trouble. I accept the plaintiff's corroborated account of what took place at the interview between her and the defendant on June 5th. Dr. Harrison also swore he would not have treated plaintiff as defendant treated her; that her inability to open her mouth was a sufficient reason for resorting to an X-ray examination and that if a foreign body were found in the jaw an attempt could then be made to remove it; as there is a tendency for a needle, if such were present, to move, with the consequent possibility of its reaching an inaccessible place.

"On the afternoon of June 5th Dr. Richards of Toronto General Hospital staff, a gentleman of wide experience in that line, made an X-ray examination and produced several plates. A further examination was made and further plates produced on June 7th. The plates revealed the presence in her jaw of two pieces of foreign substance which Dr. Richards swore at the trial are metallic and about the size and shape of pieces of a hypodermic needle. It was then deemed advisable to operate for the purpose of removing, if possible, these foreign bodies. On June 12th an operation lasting about three hours was performed at the Toronto General Hospital by Dr. Scott assisted by Dr. Harrison, Dr. Richards being present to aid, with the assistance of the X-ray plates, in locating the foreign substances. In the interval between this operation and the time of the argument at the end of the trial, plaintiff had so far recovered as to be able to open her mouth sufficiently to permit of an X-ray examination being made of the inside of



her mouth from which plates could be developed. Upon my suggestion that this be done, counsel agreed and Dr. Richards made the examination and plates accordingly. Following that he gave further evidence, counsel for both parties being present. That evidence has removed any doubts I may have previously entertained as to whether the foreign bodies are parts of a hypodermic needle. In addition, there is the further circumstance that there is no positive evidence from which it can reasonably be assumed that they are not parts of a needle, or to account for their presence in any other way.

“I have reached this conclusion notwithstanding defendant’s statement that in his several years of practice he never broke a needle, and notwithstanding also the evidence of his office attendant, who had charge of the needles; that she never in defendant’s office saw a broken needle. The breaking of needles in the practice of dentistry, from evidence of a number of professional witnesses, seems not to be unusual. The defendant thinks he could not have broken a needle without knowing it; another witness said something to the same effect. But defendant also says he does not recollect looking at the needle when he removed the instrument from the plaintiff’s mouth. Neither he nor his attendant has a specific recollection of what occurred at this time in respect to the needles. Without charging either of them with deliberate untruth, it seems to me that what they have sworn to as occurring on that day is a belief founded on what usually happened in the office and not from actual recollection, and it may well be that if defendant had been directing his attention at the time he would have observed the condition of the needle. In any event I accept the evidence which is in conflict with that of these two witnesses and find that these foreign bodies are parts of a hypodermic needle which were left in plaintiff’s jaw at the time of the extraction by the defendant in January, 1922. I accept also the evidence of the professional witnesses who swore that such foreign substances such as these needles do, or may, move in the human body.

“Taking all this as satisfactorily proven the question still remains, is defendant liable to plaintiff in damages. It has frequently been said in malpractice cases, and accepted, that medicine (which for present purposes may be taken to include dentistry) is not an exact science. Frequently, there is a conflict of opinion amongst medical experts as to methods of treatment. What is required is reasonable skill and the exercise of reasonable care in treatment; and if defendant con-

ducted himself in this case within the limitation of these qualifications he should not be held liable.

“There is evidence, not contradicted, that trouble resulting from extraction should not continue beyond a few weeks; no witness puts that time longer than six weeks or thereabouts. Defendant’s evidence is to the effect that in ordinary cases in his experience there is no contraction after six weeks—sometimes not after two or three weeks, and usually not after one week. Plaintiff continued to come to him at intervals for treatment; according to him she did not fail to come when he required her to do so. She was relying on him; the contraction—evidence of a serious condition—continued long after the time his professional knowledge told him it should have ceased; he admits there seemed to be not much improvement; and with all his knowledge he permitted her to go on till June 5th, and even then did not approve of an X-ray examination to discover the cause of the trouble. The evidence is conflicting as to what occurred at defendant’s office on that day. The X-ray examination took place later on the same day, not on his advice but following an arrangement which she had made prior to her call at his office. Some witnesses expressed the opinion that prompt efforts should have been made to remove the needle after it had broken in her jaw. Another opinion—a surprising one—suggested that in certain circumstances when a patient has not been made aware of the non-removal of a needle or broken part of a needle, it would be wise not to attempt to remove or disturb it. The failure of the operation which followed the X-ray examination to remove the pieces of needle in this case was connected in the mind of some of the witnesses with the delay in ascertaining, and taking steps to remove, the cause of plaintiff’s condition; and it is a reasonable deduction from the evidence that the failure of the operation to remove the pieces was attributable to, or in any event seriously connected with, that delay. Assuming that defendant was innocently unaware of the presence of the needle in the plaintiff’s jaw (which, however, I do not assume) I am not to be understood as finding that the failure of the treatment he prescribed to bring about satisfactory results within the maximum he says is usual, subjects him to liability. That, however, is not this case; and I cannot but think that defendant, knowing as he must and should have known the cause of her condition, did not exercise that reasonable care, and perhaps not even reasonable skill, which he was called upon to exercise.



“The case has given me much anxious thought and because of its unusual character I have reached and now adhere to my conclusion after long deliberation.

“Plaintiff suffered pain and inconvenience for many months and had not fully recovered, and was still undergoing treatment, at the time of the trial; her outlay also ran into a very substantial sum. An allowance of twenty-three hundred dollars (\$2,300.00) as damages is by no means excessive and she should have judgment for that sum and costs.”

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## Notes

Drs. Johnson and Gattie, of Chicago, were welcome guests at the Ontario meeting.

The Publicity Department of Conquest, Sask., community club, is seeking a dentist.

The Dental Association of New South Wales, Australia, insures its members against accident to the amount of \$2,000 for \$5.00 per annum.

Dr. Alward, dentist, was elected Mayor of Prince George, B. C., recently, defeating his opponent, W. Ogilvie, barrister, by over one hundred majority.

The unveiling of the portrait to the late Dean Willmott adds another permanent remembrance to the memory of one who served his day and generation with honor and distinction.

Life pensions for noted and proven discoveries in medicine would seem to be a feasible method of rewarding those who succeed. But there are hundreds of experimenters in research who get nowhere, but discover facts which help others; these might well be supported by salaries.

In the last issue of the Milford News appears an outline of a chart on what can be done for “*the oral machine*”. Like many other such charts it finds difficulty in reaching a correct order for all cases. The fact is, the order of procedure in any given case must be governed by what presents. The chart in question gives the instruction in oral hygiene after the mechanical operations have been completed. This plan is only suitable in cases where such instruction has been given at a previous period of appointments.

Dr. Edmond Noyes has published a new edition of his book on “Ethics and Jurisprudence.”

The Deaner Institute of Kansas City was officially opened May 23 and 24. This institute is a real innovation in dental practice. A number of distinguished dentists and physicians have joined together to conduct a dental practice along the lines of the Mayo clinic. A large endowment was left by Mr. Deaner for its establishment and maintenance.

Dr. H. C. Moxham in the Dental Science Journal of Australia makes the following statement on the modern aspect of pyorrhea and its treatment. There is every reason to believe that the first infection of the oral cavity is in the tonsil and that the tissues around the teeth become infected later. This is the conclusion arrived at after several years of work in conjunction with Dr. L. Utz on the pathogenic flora of the mouth. Some hundreds of bacterial examinations have been made during that time.



## Dental Service Department

Doctor Webster,—Sorry to bother you, so soon out of college, having just graduated.

Have a very interesting case on hand which has me baffled.

I have a lady with a case of periclasia. Her health is very bad. She is living on a milk diet and her medical doctor is puzzled and thinks it may be her teeth.

There are pockets of from 2 to 6 mm around them all except the two upper centrals.

The most of them have a bluish tinge to the gums, some worse than others. The patient reports a bad taste in the morning and spits out pus. These teeth are so sensitive I could not scrape them. Most of the worst teeth have been extracted. The X-rays show no abscesses.

The lady is about 35 years old and is willing to do anything or go to any expense for relief. Last year she spent \$40 on periclasia treatment. Do you advise extraction of all?

Yours very truly,

Answer:—In such cases every possible source of infection should be removed from the mouth. This may involve full extraction. If any teeth are left they should be in normal occlusion and not infected.

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Dear Dr. Webster,—Received your letter of June 27th regarding a patient about whom I was asking advice, concerning the removal of the remaining teeth, which showed signs of periclasia.

I wish to thank you for your advice and also state the wonderful improvement in her condition since their complete removal.

The woman was anemic, suffered from indigestion and was being treated for ulcer of the stomach. She was a woman of about thirty-five and took good care of her teeth. There were twenty-four remaining. At first glance everything appeared quite healthy. On close examination pus pockets of varying depth could be seen around nearly all teeth, and this condition had received careful treatment. The occlusion was fairly normal. She had been advised that her teeth were not the cause of her trouble.

Her condition now, instead of being almost hopeless, is rapidly improving.

## Correspondence

Editor, Dominion Dental Journal:

On page 191 of the June issue of the Dominion Dental Journal, under the title "Dental Service Department," a question has been asked in regard to the proper treatment of a patient 5 years of age with two permanent teeth which are in a poorly developed condition.

May we suggest that the operator employ Ammoniacal Silver Nitrate and Formalin. If he will follow the instructions, applying this consistently, regularly, as may be required (this may mean every two or three months) it is our belief that he will be able to keep those teeth in sound condition until they are fully developed.

This is an interesting case, and if the suggestion we submit is employed, we would be interested in hearing the result at some later time.

In making these applications, gold applicators should be used with a few shreds of cotton.

Very truly yours,

P. N. Condit.

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**FOR SALE**—Fischer X-ray Unit A1 condition. Takes Medical and Dental radiographs. Cash or terms. Box 11, Dominion Dental Journal, 73 Richmond St. W., Toronto.

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**FOR SALE**—Partial dental equipment in well established office in Alberta. Good opening for a young man. Apply Box 12, Dominion Dental Journal, 73 Richmond St. W., Toronto.

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**WANTED**—Position or partnership by experienced operator. Graduate of 1919. Hold D.D.C. Certificate. Apply Box 13, Dominion Dental Journal, 73 Richmond St. W., Toronto.



# Dominion Dental Journal

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No. 8

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F. J. Conboy, D.D.S., Toronto, President, Ontario Dental Association, 1924.

## President's Address, Ontario Dental Convention

Dr. F. J. Conboy.

Mr. Chairman, Ladies and Gentlemen:

The position of President of this Association carries with it many obligations and responsibilities, but it also has a large number of redeeming features and rewards. Foremost among these compensations is the privilege of giving the annual message to the members of the profession, and I desire to make the best possible use of this opportunity by presenting to you what I consider to be a sufficient and efficient dental public health programme. But first of all allow me to express to you my deep appreciation of the honour conferred upon me by making me your executive officer. It is indeed no small thing to have been given the privilege of serving you in this capacity during the past twelve months, and I wish to take full advantage of this opportunity to express my gratitude. I do not intend to take time to review the activities of the year, but, a study of the various reports will show that some very useful work has been accomplished and these different achievements will, I am sure, meet with your approval.

The profession of dentistry is rapidly rising to a proper estimation of its responsibilities to the general public. Ten years ago the dentists who performed the ordinary dental operations for the patients who came to his office considered that he was doing his full duty and was practising the science of dentistry in an efficient and satisfactory manner. But we now realize that dental science is dental wisdom set in order; it is known as science by its orderly arrangement, but above and beyond all matters of arrangement the wisdom itself must take rank. Wisdom and experience have taught the members of our profession that as we are in a large measure responsible for the health of the general public, we must ascertain the relationship between systemic diseases and dental conditions and must strive to prevent these diseases by removing the cause in so far as the treatment of these disorders lies within the province of the practitioner of dentistry. Investigations conducted by reliable and competent research workers and our own observations, prove conclusively that dental diseases are a menace to the general health and that the physical welfare of the people cannot be properly safe-guarded until all the members of our profession realize



and accept their full responsibility as co-workers with physicians in the field of preventive medicine. The dentist's main function is not merely to fill teeth or restore masticating surfaces, but to protect the health of his patients and the general public. Dentistry has now been exalted to the highest rank in preventive medicine; unfortunately a number of dentists have not as yet fully realized that the dental profession has this definite service to render to humanity, that we have it within our power to prevent premature deaths and prolong the average length of life.

How are we to fulfill our mission and render to the general public the service which they have a right to expect of us? There are three ways in which we can function. *First*, by actual dental work, the performance of the necessary operations in the most modern and efficient manner. *Second*, by advising and educating our patients, explaining the dangers that may arise from neglect and showing how dental disease may be prevented, and *Third*, by educating the general public.

In connection with the first consideration little need be said in so far as the individual dentist is concerned. The dentists in all parts of the Province are making an earnest effort to render an efficient service and the large attendance at this Convention proves beyond the shadow of a doubt that the members of the profession are anxious to learn all that is modern and up-to-date in knowledge and method. But what about the thousands of citizens who for various reasons cannot have a family dentist? Those who are earning a very small wage, the children whose parents are poor and those living in communities too small to support a resident dentist? We, as a profession, have a responsibility and a great responsibility in regard to these people, but, the full burden should not be placed upon our shoulders, surely we must do the actual work and take a leading part in the organization, but governments, municipalities and public spirited citizens must accept their full share of the financial obligations. The members of this profession are prepared to give their time gratuitously in connection with the maintenance of a dental department in any hospital, providing that branch of the hospital service is equal in standing with all others. We are prepared to organize travelling clinics so that the people in outlying districts may be properly cared for, only stipulating that the practices of the resident dentists in these localities shall not be interfered with. We are willing to freely give our time to make initial surveys so that facts and statistics, which will con-

clusively prove the need for a school dental service in any community, may be assembled and tabulated, and we are anxious to assist in the organization of work to be carried on in connection with the various factories and shops, so that the industrial workers may be informed in regard to the menace of dental diseases and the best means of protection. We appreciate the pressing need for pre-school clinics, being firmly convinced *that all children should come under the care of the dentist before they are three years of age*, and are willing to accept our full share of responsibility in connection with the establishment of these clinics. The deciduous teeth must be preserved; they serve the child during the period of greatest development, but unfortunately in many cases they are hopelessly decayed and infected before the child enters school. A pre-school clinic means a smaller number of poorly nourished children, less sickness and fewer premature deaths from preventable diseases. But in all these activities we have a perfect right to expect assistance from governments, municipalities, welfare organizations and all citizens who are interested in the well-being of their fellows and especially concerned about the health and happiness of the boys and girls.

In connection with the second consideration, that of advising our patients in regard to the proper care of the teeth, I would like to point out the absolute necessity of teaching dental health habits to the children. It appears to me that the home and school provide so much supervision and care that the children, unless permanent health habits are formed, will neglect to properly care for themselves when left to their own resources. They will become so accustomed to the regular school inspection and the arrangements for the work being made without any effort on their part, that unless special instruction is given or some follow-up system devised, much of the beneficial results of the school service will be lost.

In considering our responsibility in regard to the educating of the general public, we must bear in mind that it is quite possible to create a new outlook, to change opinions and to move human energy in any proper direction by organized public persuasion. The most potent force in educating the masses is the news columns in the daily or weekly papers. The Press is always willing to assist in connection with any worthy undertaking, and there is no publicity work of as great importance as health education, but the newspapermen must be convinced that we are actuated by a praiseworthy motive,



and are not trying to serve ourselves, and material presented must be attractive and readable. Lectures to teachers, Conventions, Home and School Clubs, Women's Institutes, Nurses' Associations, and other organizations, form a very important part of our educational work as these bodies exert a great influence in moulding public opinion. A perusal of the printed report presented by the Oral Hygiene Committee will convince you that ample provision has now been made for addresses to be given by members of the profession, and the necessary information together with still or moving pictures will be supplied by the Committee upon request.

Public spirited men and women are now taking a greater interest in Oral Hygiene work and the favorable response made by a number of prominent citizens when asked to assist in the organization of the Canadian Dental Hygiene Council is an evidence of the fact that many persons outside the profession are anxious to help along this movement which has as its primary object the development of a higher standard of public health. A full report of the Canadian Dental Hygiene Council will be presented at this Convention. This combined action on the part of prominent laymen and dentists will I am sure meet with your approval, and every dentist in Canada should give it his enthusiastic support.

As a profession we are beginning now to realize our full responsibilities and to recognize our grand opportunities for service, and I know that I am meeting the desires and expressing the opinions of the dentists of Ontario when I say we will not refuse to accept our responsibilities, nor will we neglect any opportunities which may present, which will enable us to render an efficient and altruistic public service.

## Bridgework and Its Relation to Dental Periclasia

*By Andrew J. McDonagh, Toronto, Canada.*

(Read before the Bay of Quinte Dental Society)

Gentlemen;—According to the program which you sent me for this meeting I am expected to speak upon bridgework and its relation to Dental Periclasia.

At the last meeting of the American Dental Association in Cleveland, Ohio, Sept. 10-14, 1923, I delivered a paper on this same subject which has not been printed in Canada but which has appeared in the Journal of the American Dental Association, therefore, in my talk to you today I am going to quote largely from that paper and the slides I use will be the slides I used for that paper.

Recent research has been to a great extent devoted to an endeavor to solve some of the problems connected with the results of stress and forces used in mastication, consequently I feel sure you will be interested in the problem which I presented at the American Dental Convention and I believe no excuse will be necessary to make to this audience for quoting as largely as I intend to do from that paper.

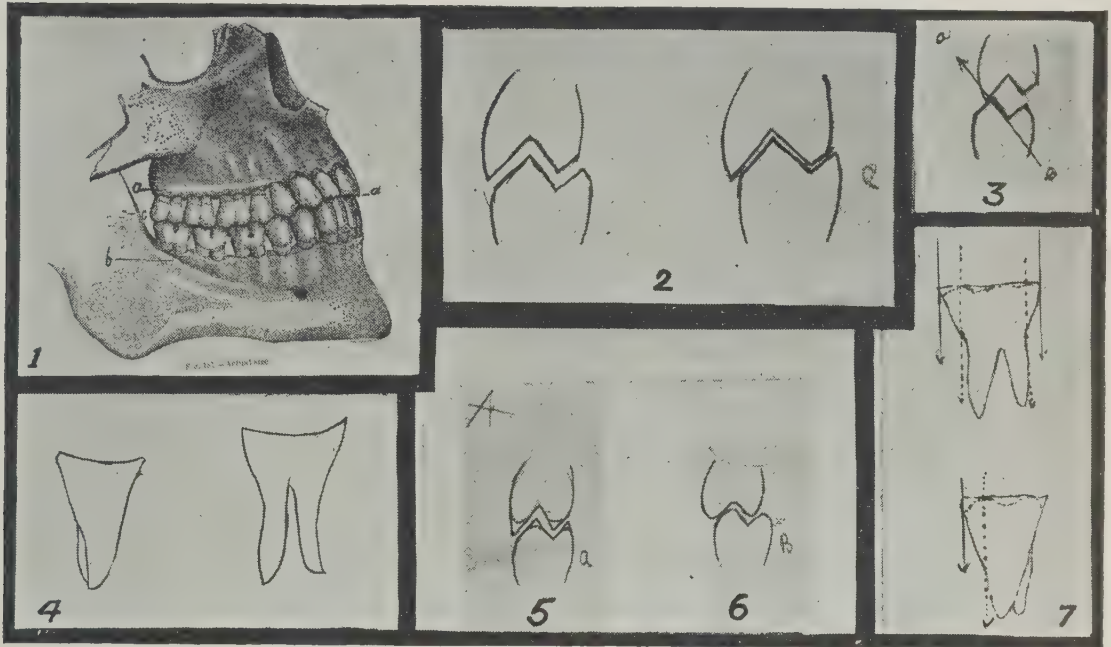
To a certain extent, it is the style today, and has been for some time past, to criticize adversely fixed bridgework and to boost all forms of removable bridgework, the principal reasons given being the health and preservation of the periodontal tissues, but I doubt very seriously whether this teaching has not been greatly overdone. Sometime during last year questions were sent out to many of the leading dentists of the United States by the 'Items of Interest' asking their opinion regarding the effect of fixed bridgework on supporting tissues. It was surprising to note how nearly unanimous the verdict was condemning fixed bridgework, the answers being usually based on theory and the present-day teaching of pathology. In the face of this sort of evidence, it may be well to present the other side of the story.

It is the province of the periodontist to study the periodontal tissues and to know the effect of all forces and conditions on these tissues. In this connection, the forces used in mastication and the other movements of the mouth play a great part in his studies, and he has come to understand the fact that the movements of the mouth, when properly carried out, are of very great importance to him in his work; he



realizes also that the forces used in the excursions of the teeth, that is, while the teeth are in the process of eccentric occlusion, produce a baneful, or beneficent effect. This holds good if the teeth are natural and thirty-two in number or if some of them are replaced by bridgework, by inlays, or by partial or full dentures.

Nature in supplying us with thirty-two teeth (provided she is not interfered with) gives us a perfect occlusion as shown in Figure 1. The cusps are not too long and not in



abnormal positions; thus we have no traumatic torque in eccentric occlusion and no undue leverage of any kind. To speak of the cusps occluding in normal occlusion is much better than to say interlocking, because interlocking gives a wrong impression. The term "interlocking" may well be used under certain conditions. For example, if the teeth are not normal to begin with, or if we have them ground by an unnatural habit so that they interlock as in Figure 2, where there is perfect wedging of one tooth into the cusps of another, the lateral force such as there always is in eccentric occlusion will bring these teeth into contact as in Figure 3, and the force exerted will be along the line *ab* and at a definite angle to the long axis of the tooth. This, of course, is not normal and will cause an unnatural or unusual leverage. This condition not only occurs in natural teeth, but it is copied, we may say, and reproduced in many pieces of bridgework.

Another condition which the periodontist has continually to deal with is that of a large molar tooth, the surface of

which has been ground flat from constant or pernicious use, as shown in Figure 4. It is not difficult to see that a tooth ground in this way does not lend itself to the best results in the process of mastication, a traumatic torque and an injurious leverage resulting. This condition again is reproduced in many crowns and also in bridgework. We find that both these conditions are comparatively easily rectified, particularly in natural teeth. For instance, in the case of the bicuspid which were interlocked and wedged together, simply by rounding off the cusps, as shown in Figure 5, the whole condition is changed, the line of force of mastication being carried nearer to the long axis of the tooth, demonstrated in Figures 6 and 7. One should note the change of the forces used in the molar tooth when that tooth is ground to more nearly normal shape, as shown in Figure 7. In such cases, the periodontist finds immediate and wonderful benefit resulting to the periodontal tissues, no other treatment being necessary after correcting the traumatic torque.

If too much of the periodontal tissue has not been destroyed, restoration to health and stability is a matter of a very short space of time, the improvement taking place in from one to three days. These facts being known to the periodontist, naturally he examines every case of bridgework which does not seem to be "standing up" (as the expression goes) to the satisfaction of the patient or himself. He examines them critically for torque or leverage, but in bridgework not only has the operator to take care of torque as we see it in a single tooth, but as the bridgework is of greater length than any one tooth, he must guard against leverages which may creep in on account of the length of the piece.

A great deal has been written and said about traumatic occlusion and, we must acknowledge, not without cause. As you would naturally expect, the doctrine of traumatic occlusion has been very vigorously applied to bridgework, but the enthusiastic advocates of this teaching have been overzealous. When a writer tells us that if you put a bridge from a second molar to a cuspid tooth that that bridge is sure to fail because those five teeth of the bridge are going to do the work of the original teeth, and have the same force applied to them in mastication that the original natural teeth were created for, he is not taking into consideration many vital facts, a very important one being that our teeth are placed in sensitive sockets.



The periodontium is composed of sensitive living tissue, which fact must be and often is not taken into consideration. Presuming that the five natural teeth spoken of above—the second molar, the first molar, the two bicuspids and the cuspid—are healthy teeth and that a bolus of food is to be crushed by them, you will find that these teeth will stand just as much pressure as they are comfortably able to bear; if you increase that pressure, a feeling of discomfort or even pain will warn you to stop. In other words, they will carry just the load they are fitted for and no more. Now suppose we take the same bolus of food to be crushed by a bridge extending from the second molar to the cuspid; the two abutments which are carrying that bridge will stand just as much pressure as ordinarily they are capable of standing and no more. As soon as you exert too much pressure on them, as in the former case, you will be warned by a sensation of discomfort or pain, indicating that they will not take an overload any more than the original five teeth would. Whether they would as efficiently masticate a quantity of food in a short time is another question. Therefore, the extraordinary amount of work that these abutments are called on to do or are supposed to be called on to do is not as great a factor in the case as we sometimes are led to believe. Leverage is very apt to be confused with overload, and the longer the bridge, the more likely is this confusion to occur. In this connection many things are to be considered. For instance, if a bridge is made so that the force of mastication does not come approximately at right angles to a straight line connecting lines running through the long axis of the teeth, such a bridge is receiving an unnatural leverage, and the failure in such a case would probably be not from overloading the abutments, but would be as a result of traumatic torque or leverage.

To understand this question more thoroughly let us go back to some of our elementary histology in which we learned about the different fibers and structures of the pericementum. Figure 8 illustrates the strands and fibres which make up the pericementum. We note how Nature has adequately provided against a pressure in a line of the long axis of the tooth by the presence of a fibrous cushion at the apex of the tooth, assisted by the oblique and transverse fibers. The fibers at the alveolar crest (Figure 9) and the transseptal fibers provide to a certain extent against luxation or torsion of the tooth; nevertheless, the weak point to be taken

care of is in the lateral direction. And although the alveolar crest fibers seem to have had assigned to them a great part in protecting the teeth from this particular strain, Box tells us that as soon as the development of the tooth and its alveolus is complete, the alveolar crest starts to break down (Figure 10). In confirmation of this teaching we have all observed in our roentgen-ray work that there are apparently very few, if any, of our patients at the age of 30 years, with a perfect alveolar crest.

Now, besides the fibers contained in the pericementum, there are lymphatics, veins, arteries and the smaller connecting blood vessels (figure 11). The pericementum on the lateral aspect of the tooth is not so constructed nor is it of sufficient bulk to protect adequately the vessels contained therein from a lateral force. The condition is accentuated as age progresses. Figure 12 demonstrates radiographically the actual thickness of the pericementum, in contrast with the diagram shown in Figure 10, showing the oblique and other fibers. It also shows the alveolus after the crest has been destroyed, and the disadvantages that the vessels of the pericementum are laboring under in this case.

The arteries have an elastic coat, besides the elasticity imparted to them by the force of the heart's action, so that it is a difficult thing to crush the sides of the arteries together. The veins and lymphatics have no such protection; consequently, they are not capable of recovering from a trauma as readily as the arteries are, and their function is thereby seriously interfered with.

Overloading the abutments of a bridge, particularly of a fixed bridge, is spoken of as a very common occurrence, and all failures of bridge abutments are apt to be attributed to this cause, but if one will examine the radiograms of all the full cases of teeth which come under one's notice, it will be evident that there are many causes other than overloading which are responsible for the failure of abutments of bridges; also in conjunction with radiograms, if one examines the occlusion to see whether or not there is a torque or leverage exerted on the occlusal surface of the bridge, one will probably come to the conclusion, that we must revise our opinion with regard to the importance of the overload. Do we not, then, ever have an overload? In my experience in the molar and bicuspid region, the only time that I have seen abutments destroyed by overloading has been when a bridge on one side of the mouth has been made to open the bite and make

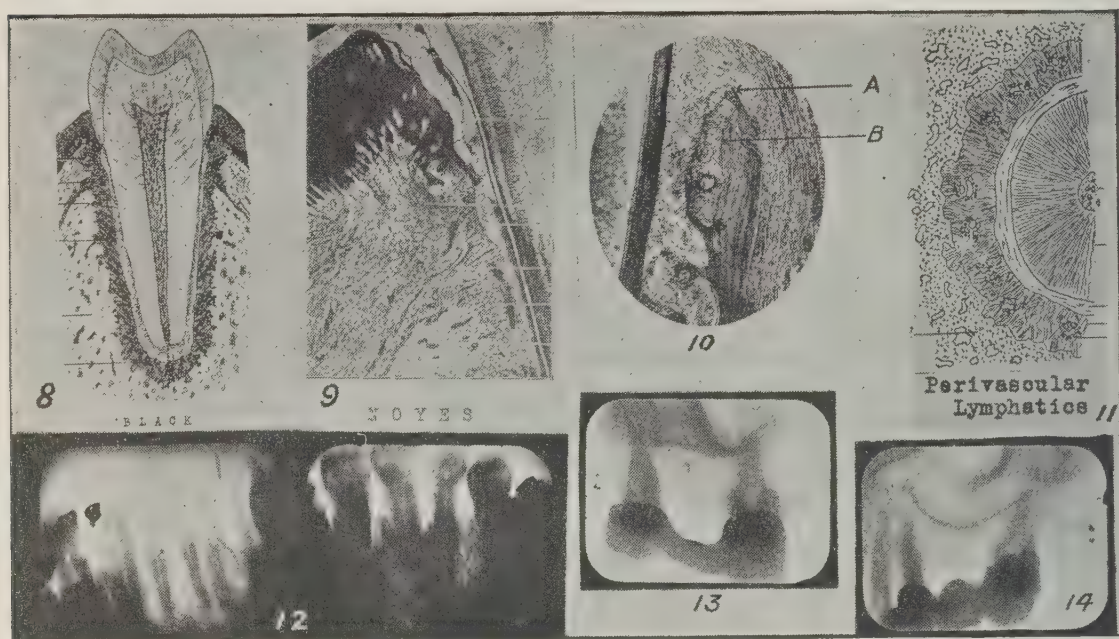


it difficult or impossible for the teeth to close on the opposite side of the mouth, in which case one may look for trouble, even if that opening is but the small fraction of a millimeter. As a consequence of this condition, and when an effort is made to close the teeth on the opposite side of the mouth, there is an unnatural stress applied to the abutments of the bridge, which appears to act as a trauma. The same thing will happen to a crown which has been made to open the bite slightly, in which case every closure of the jaws is an accidental blow to the elongated crown.

If overloading were as great a factor in fixed bridge-work as we are sometimes taught, it is hard to explain the fact that every one of us has seen twelve and fourteen tooth bridges having only four or five abutments worn comfortably for a number of years, sometimes for as many as fifteen and twenty years. Unfortunately, men who have been in the habit of putting on bridges of this size are not the most conservative or scrupulous men, and they have sometimes used teeth for abutments which were not fit to support any bridge, in fact, which should have been extracted. Careful operators, as a rule, will not use or advocate a bridge of this extent because it is neither wise or necessary, much better restorations being possible. I am simply mentioning the fact in refutation of the too widespread use of the word "overloading" as an explanation of the destruction of the periodontium. Figures 13, 14, 15, 16 and 17 are radiograms showing the abutments of bridges. Most of the bridges have been in for years.

Often a bridge will bring into use a tooth or teeth which otherwise would not be used, and consequently through a lack of use would be thrown out by Nature. The healthy exercise which a bridge would give them and the exercise which mastication and the other functions of the mouth provide not only act as a stimulant to the tissues but are also used by Nature in other ways. This is particularly true regarding the venous circulation of the pericementum. As we remarked above, Nature does not provide the veins with the same mechanical help to drive the blood along in its course as is the case with the arteries. The venous circulation in the pericementum is greatly facilitated every time compression takes place in the direction of the long axis of the tooth. This pressure is not absolutely necessary to empty the blood vessels but it greatly assists whether the pericementum is the pericementum of the abutment of a bridge or not.

To digress for a moment; a study of the forces used in the act of swallowing is of great use to us in this connection. This act is performed 400 or 500 times a day apart from the many times it is performed during mastication, and the least



Note: Fig. 10—A, Showing where part of the crest has been restored. B, Alveolar process.

pressure which is used in the act of swallowing, if the teeth occlude normally, amounts to about 8 or 10 pounds. It does not require a great stretch of imagination to grasp the probable benefits resulting from this very common and almost unconscious action whereby gentle stimulation is applied to the pericementum from thirty to fifty times an hour of every waking hour of the day. No amount of brushing or finger massaging is ever likely to take the place or have the good effects of proper swallowing, and I do not desire to underestimate the very great beneficial effects obtained by proper brushing and proper massaging. However, we must not lose sight of the fact that if the pressure exerted through faulty construction of a bridge or faulty formation of the teeth is in an abnormal direction, instead of a stimulant we have an irritant and "overstimulation," if you like, and the result will be injury to the periodontium.

Another argument used against fixed bridgework is that it prevents the natural movements of the teeth in their sockets. This leads us to inquire into the movements of teeth in their sockets. There are three directions in which a tooth may move; (1) it might sink into the socket, which we may call a vertical movement; (2) it might have a movement from



the lingual or toward the lingual surface, which we may call a bucco-lingual movement, or (3) it might have a movement toward the adjoining tooth, which we may term a mesio-distal movement. Let us consider the mesio-distal movement first. We are taking it for granted that any movement of the teeth which should not be interfered with is a normal movement and provided for by Nature. However, Nature has so placed the teeth that the contact points of every tooth touch the contact points of every adjacent tooth mesially and distally, except, of course, the third molars. This establishes perfect contact from second molar region to second molar region and ideally leaves no room for movement; therefore, a movement in this direction can be disregarded. A bucco-lingual movement is possible and compression into the socket is also possible and can be actually shown to take place.

Let us now consider a bridge from the second molar to the first bicuspid, a very common and a very useful example of fixed bridge. When we cement this bridge in place, there is a possibility still of bucco-lingual movement; therefore, we do not interfere with that movement materially nor do we interfere with compression into the socket. As a matter of fact, if we believe in the doctrine of overloading, compression into the socket would be increased rather than decreased. The only movement that we would seriously interfere with is the mesio-distal movement, a movement which does not ideally exist.

So much has been written on this subject in condemnation of fixed bridgework that many dentists have come to believe that they are conferring a benefit on their patients by taking out all fixed bridges and replacing them by removable appliances. There are apparently no half-way measures for this class of operators. They do not seem to consider the individual case; for them it is a crime to fasten two teeth together, in any way. Their solicitude for the health and preservation of the periodontium is so great that they throw common sense to the winds. Recently I saw a case where a bridge from the first bicuspid to the second molar was in place for twenty-six years. It was comfortable but fairly difficult to get clean on account of the rather short bite. The occlusion, however, must have been good, for both abutments were in good condition. The patient drifted into the hands of a young dentist who removed the fixed bridge and replaced it by what he termed a removable one, using a cast clasp with an occlusal rest on the molar and a wrought clasp on the

bicuspid. In less than a year the molar had become loosened and the gum anterior to the molar was intermittently red and swollen. No doubt, the trouble there is due to faulty construction, but it is very hard to convince that patient that she has been benefited by having the fixed bridge removed.

This case is not an isolated one. There are many instances of patients who for years have been wearing fixed appliances quite comfortably having been persuaded to make a change to the removable variety and who, as a consequence, have lost the abutments through the destruction of the periodontal tissues. The fault in some cases, no doubt, is with the dentist, who does not use good judgment in the kind of removable appliance he employs, or perhaps does not construct his appliance properly. The result, however, is that the patient suffers, no matter where the fault lies. A removable appliance, bridge or plate, well made and placed with good judgment, in many instances is advisable and will not injure the periodontium. But how many of this variety do we make as compared with those which do an injury to the soft tissues? Then why do we resort to removable appliances in preference to fixed bridgework? Usually and principally because, as said before, fixed bridge-work is dirty, and sometimes because the space under fixed bridgework, called the cleansing space, is an annoyance to the tongue and a hindrance to speech. So far as failure to perform the functions of mastication or to stand up under use is concerned, my observance has been that properly constructed fixed bridges do not fail. When bridges fail, they do so from the causes that result in periodontal destruction around teeth, whether they are bridged or not. In other words, if you have an unnatural leverage exerted on a bridge or on a tooth, you are almost sure, sooner or later, to have a disturbance ending in dental periclasia, not mentioning, in this connection, pulp canal operations.

This evidently is what happened in the case described above: the cast clasp grasped the molar tightly and the wrought clasp could move easily on the bicuspid. Every time a pressure was placed in the region of the second bicuspid, the soft tissue would yield and the denture would act as a lever on the molar, resulting at first in a traumatic torque, and, as the tissue gave way around the molar, a pathologic condition was established, which has been described previously in this paper and which will eventually result in the loss of this molar tooth. The same condition of things



is observed when a bar extends along the alveolar ridge attached at one end to a tooth or possibly to two teeth adjoining one another and this bar is used to support and retain a removable restoration. This method of restoration is sometimes erroneously called the Gilmour. Until recently, little attention has been paid to occlusion as a factor in bridge-work, or as a cause of the destruction of the periodontium of the abutments of bridges. Our whole attention has been focussed on the fit of the gold bands which encircle the roots at the gingival margin, or on the nicety of adjustment of the porcelain which was fitted to the ground-off root. True, if the gold does encircle the root at the gingival border, it should be fitted so that there is no irritating edge of gold or shoulder of root, and if it is done properly, the gingival tissue or gum will not shrink away and leave the root exposed, notwithstanding the fact that the gum may shrink away from every other tooth in the mouth. This is illustrated in Figs. 18, 19 and 20, the tooth marked x in each case being the crowned tooth. But we all have seen very badly fitting crowns acting as the abutments of bridges which did not nearly fit the roots of the teeth they were crowning; in fact, they sometimes stand out 1 mm. or more from the root, and the bridge remains solidly in place for years. On examining these cases, we invariably find that there is no traumatic torque or undue leverage. Again let me draw your attention to the fact demonstrated here that the line of force of occlusion should be as nearly as possible at right angles to a straight line connecting the lines of the long axis of the teeth used as abutments.

According to the foregoing, fixed bridgework has very many good points. It also has its shortcomings, the principal one being that it can be constructed so that it is a very dirty appliance, so much filth accumulating under it that the soft tissues become inflamed and are probably a source of infection. We may say that this is due to faulty construction. To get away from this trouble and also to get away from the irritation of the so-called cleansing space which to a few people is very irritating we resort to what we are pleased to call removable bridgework. The designs of removable bridges are many and varied, some answering our purposes very well, and others being not so successful.

After I had been in practice a few years, the benefits and disadvantages of fixed bridgework became evident to me, and in an endeavor to combine the advantages of fixed bridge-

work, as made evident in the periodontium of many cases, with the advantages of proper mastication through the medium of vulcanite dentures, I conceived the idea of connecting by a bar the teeth in the jaw which remained after most



of the teeth had been extracted and of using this bar to retain the denture in place. Many of these appliances were inserted, a few of them doing service at the present time. The bar was constructed of the square platinum posting which was used at that time to make posts for crowns. About 1900 or a little later, this appliance was shown in Buffalo at a convention, at which convention Dr. Fossum had on display an exactly similar appliance which he also was using in his practice. This style of restoration later gave place to what is known as the Gilmour bar and clasp appliance, which is used today to a certain extent.

We must remember that in order for an apparatus of the style of the Gilmour apparatus to be useful, it must be a benefit, and not an injury to the teeth to which the bar is attached. If this is done, and it can be done, the Gilmour form of construction is one of the best and longest tried out of any of the removable restorations that have been used. Just lately I have seen a "Gilmour" (square bar) in place which has been there for twenty-five years; the teeth to which the bar was attached were the only teeth that remained firm in the mouth. In this case the removable denture did not rest for support on the bar. There was at least 1-2 mm. to spare, after these years, between the bar and the vulcanite which was the body of the removable part, and as the bar was square, the attachments did not grasp around it as the ordinary attachments on the Gilmour do, but clasped against



the two parallel sides of the bar. This method of retaining removable parts of the Gilmour in place will act satisfactorily on the round bar, the sides only of the bar coming in contact with the clasp retaining the piece. In this way we have stability given to the abutments, and no dependence rests on them or on the bar to withstand the force of mastication. The teeth are thereby given very little exercise; therefore, provision should be made, particularly in regard to the molar teeth, for them to get sufficient exercise in mastication by coming in contact with occluding teeth. When properly made, this form of restoration is one of the most successful and one of the simplest I have seen. When not properly made it is a very unsatisfactory piece of work. Repetition of the fact that it is not wise to have a bar that is not attached at both ends to a tooth will do no harm. We should never neglect to supply healthy exercise for the natural abutments.

There are some other forms of removable bridgework used as restorations (some of those now called removable bridgework formerly would have been called dentures or plates) which in certain cases are successful, but which we know are usually in the wrong place. Removable bridgework which squeezes the gingival tissue up against the tooth, which puts a leverage or torque on the tooth, or which will almost surely cause an abrasion or destruction of the tooth should be avoided. If we decide to use a removable appliance, it must be made to protect the soft tissues as well as the other parts of the periodontium, but the great danger is through its attachment to, and retention by, the abutment teeth. Great care must be taken to avoid torque or leverage on such abutments, and it is nearly impossible to do so if the piece depends partially on the teeth and partially on the soft tissues for support. Such an appliance may be a success at times, but in my experience its life of usefulness is not a long one.

As was mentioned before, there are a great many clever forms of removable and fixed bridgework. I would ask you to study the advantages of a combination of the two different departments of bridgework exemplified by that which is termed, in lieu of a better name, the Gilmour bridge type. But let me repeat the warning. The bar must not carry a load.

The remedies have only been hinted at, but from some of the statements contained in this paper it is obvious that in dealing with the mouth and teeth we are not dealing with

an inanimate machine which is governed only by the laws of mechanics; on the contrary, the vital factor is always present, and we cannot ignore it. Any kind of apparatus which does not take this fact into consideration will be a failure.

Another fact which a study of this kind brings to our minds is that the teeth are developed to perform their functions and give their best service when there are none of them missing. They need the contact and support of their fellows in health. When through disease or accident some of them have been lost or some of their supporting periodontium has been lost, a good artificial substitute for that lost tissue will very materially prolong their life and usefulness. It is then a matter of judgment of the operator as to which kind of artificial restoration he can use—which in his hands will attain this object with the greatest satisfaction to himself and to his patient.





# Dentistry in Great Britain

(Continued from the July Issue)

REGULATIONS TO BE OBSERVED BY CANDIDATES FOR THE DIPLOMA IN DENTAL SURGERY OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH FROM OCTOBER, 1923, TO OCTOBER, 1924.

*These Regulations apply to Candidates who have registered as Dental Students after January 1, 1923.*

## PROFESSIONAL EDUCATION

Every candidate for a Licence in Dental Surgery must produce certificates showing:—

(1) That he is 21 years of age.

(2) That he has been registered as a dental student.

(3) That he has subsequently to the date of registration as a dental student been engaged in professional study for not less than four years, of which three at least have been spent at a school or schools recognized for professional study by one of the licensing bodies.

*Note.*—In the case of previously registered medical practitioners, two years' instruction in the special dental subjects will be held sufficient.

(4) That he has attended courses of instruction in the following general subjects at a recognized medical school for the period specified:—

(a) Elementary biology, including practical biology, not less than one academic term.\*

*Note.*—A student who has diligently attended an approved course of elementary biology in a secondary school or other teaching institution recognized by a licensing body may be admitted to a professional examination in elementary biology immediately after his registration as a dental student.

(b) Human anatomy (including embryology) with dissections and demonstrations, not less than three academic terms.

*Note.*—Where demonstrations are given as a separate course, it is recommended that these should be taken out along with the dissections.

(c) Physiology (with laboratory instruction) including practical histology, not less than two academic terms.

(d) Chemistry in its application to dentistry, not less than one academic term.

(e) Physics in its application to dentistry, not less than one academic term.

(f) General pathology, including bacteriology, not less than two academic terms.

(g) General medicine, not less than two academic terms.

(h) General surgery, not less than two academic terms.

(i) The practice of a general hospital or hospitals of not less than eighty beds, with certified instruction in clinical medicine and clinical surgery, not less than four academic terms.

(j) Clinical instruction in venereal diseases.

*Note.*—(i) Where clinical instruction is given in the form of a course of lectures, it is recommended that two winter sessions of hospital attendance of two terms each should be followed—clinical surgery during the one and clinical medicine during the other being attended.

(ii) The certificates of teaching at general hospitals should furnish evidence that the student has acted as medical clinical clerk and as surgical dresser, and that he has attended in the out-patient or casualty departments.

(5) That he has attended at a recognized dental school for the period specified courses of instruction in the following special subjects:—

(a) Dental anatomy and physiology, human and comparative, not less than one academic term.

(The course to comprise not less than twenty meetings.)

(b) Practical dental histology and morbid histology, not less than one academic term.

(The course to comprise not less than sixteen meetings.)

\* An academic term shall not be of less than two-and-a-half months.

(c) Dental pathology and surgery, not less than one academic term.

(The course to comprise not less than twenty meetings.)

(d) Dental materia medica and therapeutics, not less than one academic term.

(The course to comprise not less than sixteen meetings.)

\* An academic term shall not be of less than two-and-a-half months duration.

(e) Dental metallurgy (with practical work and demonstrations), not less than one academic term.

(The course to comprise not less than twenty meetings.)

(f) Dental mechanics (with practical work and demonstrations), not less than one academic term.

(The course to comprise not less than twenty meetings and twenty demonstrations.)

(g) A course of instruction in the use of anæsthetics (general and local, employed in dental practice).

*Note.*—A candidate must produce a certificate of having administered a general anæsthetic on at least ten occasions.

(h) Instruction in radiology as applied to dentistry.

(i) That he has for at least twenty-four calendar months attended, during the ordinary academic terms, the practice of a recognized dental hospital or of the recognized dental department of a general hospital.

(j) That he has received for not less than twenty-four calendar months, or for 2,000 hours, practical instruction in dental mechanics.

*Note.*—No portion of such practical instruction which is taken prior to the date of registration shall be reckoned as a portion of the four years of professional study required.

It is recommended that practical instruction in dental mechanics be taken at a recognized dental hospital and school. If any part of such instruction be taken by the candidate as a pupil with a registered dentist the time required to be devoted to it shall be *at least twice the time* required for the corresponding instruction taken at a dental school.

The order of study in following out all these courses should conform, generally, to their sequence as subjects of examination.

#### EXAMINATIONS

(1) There shall be two professional examinations for the dental diploma, herein called the First and the Final Professional Examinations.

(2) The first professional examination shall consist of (a) a written, and (b) an oral and practical examination in each of the subjects of (1) biology, (2) anatomy, and (3) physiology.

(3) A candidate may present himself for examination in the subjects of biology, anatomy and physiology, or for the subject of biology alone: but he shall not be permitted to appear for the subjects of anatomy and physiology separately.

(4) A candidate must pass in the subject of biology before passing in the subjects of anatomy and physiology, which must be passed together.

(6) The final professional examination shall consist of (a) a written: (b) an oral examination in each of the subjects of (1) general pathology and bacteriology; (2) general medicine; (3) general surgery; (4) chemistry, physics, and radiology in their application to dentistry; (5) dental anatomy and dental physiology; (6) dental surgery and dental pathology, together with dental materia medica and therapeutics; (7) dental mechanics and dental metallurgy; and (c) a practical examination (including orthodontics) in the subjects of (1) operative dental surgery and the administration of anæsthetics, and (2) practical dental mechanics and prosthetic dentistry.

(7) The practical examination shall be conducted so as to ascertain the knowledge and proficiency of the candidate, who will be tested in the treatment of dental diseases in operative dentistry, the administration of anæsthetics, orthodontics, and in prosthetic and mechanical dentistry.

(8) The final professional examination shall not be entered upon previous to the completion of attendance in all the prescribed courses of instruction.

(9) A candidate who has completed his course of study in the subjects of the final professional examination shall have the option of appearing for the final examination in two parts: (1) the general subjects—general pathology and bacteriology, general medicine, and general surgery; (2) the dental subjects, including the practical examination.

#### SYNOPSIS OF GENERAL SUBJECTS

*Candidates are reminded that in addition to the special Dental subjects the Examinations will include the following General subjects:—*

##### *I.—Biology.*

(1) The structure and functions of protoplasm, including the nucleus.

(2) General characters of cells as unicellular organisms, as tissue elements, and as sex elements.

(3) The chief morphological and physiological differences between plants and animals.

(4) Evolution, including heredity and variation.

(5) An elementary knowledge of classification as applied to plants and animals.

(6) The biology, structure, and life-history of amœba and paramœcium.

(7) An outline of the chief structural features, digestion, methods of reproduction, and early stages of development of hydra.



(8) *Lumbricus* as a segmented coelomate animal; comparison with coelenterates to show the chief advances in organization.

(9) Crayfish; external features, gills, and nervous system only, to illustrate the further advances in organization in the segmented animal.

(10) A knowledge of the main features of a fish (e.g., skate) and the frog, including the life-history of the latter.

(11) The structure and biology (including life-history) of protococcus, yeast, bacterium, and penicillium.

(12) A general knowledge of the main structural features and biology of the fern, and a dicotyledonous plant.

(13) The candidate must show a practical knowledge of the examples named above.

## II.—Anatomy.

(1) Bones.—The anatomy, articulations, muscular attachments and relations of the bones.

(2) Joints.—The structure, varieties, anatomy and relations of joints.

(3) A general knowledge of the muscles with particular attention to the muscles of expression, prehension, mastication, deglutition, and respiration.

(4) A general knowledge of the alimentary system with particular attention to the mouth, pharynx, and associated parts.

(5) The circulatory system; the heart and the principal vessels.

(6) The respiratory system; a general knowledge of the structures concerned in respiration.

(7) The nervous system; a general knowledge of the anatomy of the brain, spinal cord, and a detailed knowledge of the cranial and spinal nerves.

(8) The general anatomy of the viscera.

(9) A general knowledge of the lymphatic system.

(10) The elementary anatomy of the organs of special sense.

(11) The elementary anatomy of the ductless glands.

## III.—Physiology.

(1) Histology.—The cell and cell division; the epithelial, connective, muscular, and nervous tissues.

(2) Muscle.—Mode of action and relation to nerves; comparison of voluntary and involuntary muscle; tetanus; clonus.

(3) Nervous System.—General plan of cerebro-spinal and sympathetic systems; nerve centres and their function; white and grey nerve-matter; various functions of nerves; reflex action.

(4) Special senses.—An elementary knowledge of the physiology of the special senses.

(5) Blood.—Structure; composition and function; arterial and venous blood; coagulation; hæmoglobin; gases of the blood.

(6) Circulatory System.—Structure and functions of the heart and blood vessels; mechanics of the circulation of the blood; blood pressure; the pulse and interpretation of pulse-tracing; systemic, pulmonary and portal circulation; influence of vagus and sympathetic.

(7) Lymphatic System.—General arrangement of the lymphatic and lacteal systems; structure and function of lymphatic glands and lymphoid tissue.

(8) Respiratory System.—Structure of the lungs and air passages; the thorax muscles concerned; mechanism of respiration; nervous control; chemical changes in blood and air; interchange of gases; dyspnœa; asphyxia; influence on circulation.

(9) Alimentation.—Digestion; absorption; general structure of alimentary canal and the glands associated with it; composition and function of the various secretions; varieties of foods—their digestion, absorption, and assimilation; neuro-muscular mechanisms of mastication, deglutition, peristalsis, vomiting, defæcation.

(10) Nutrition.—Secretion and excretion; functions of the liver; glycogen; metabolism in general; the ductless glands; hormones.

(11) Urinary System.—General structure and functions of the kidneys; the urine; chemical and physical characters; quantity, specific gravity, &c., sources of its constituents.

(12) The Skin and its Appendages.—Structure and functions.

(13) Animal Heat.—Normal temperature, its maintenance and regulation.

## IV.—Pathology.

*General Pathology.*—(1) The various factors in the causation of disease.

(2) Alterations in the amount and distribution of the blood and fluids; anæmia, hyperæmia, œdema, thrombosis, embolism, infarction.

(3) Inflammation; the process, varieties, and results. Suppuration. Ulceration. Gangrene. Necrosis. Phagocytosis.

(4) Degeneration.

(5) Process of repair in various tissues.

(6) Bacteriology. Micro-organisms, classification and description, mode of action in disease; culture media, methods of use; pathogenic bacteria, fungi, and protozoa; animal parasites, antiseptics.

(7) Infection.

(8) Immunity.

(9) The granulomata.

(10) Neoplasms.

*Special Pathology.*—A general knowledge of the pathology of the diseases affecting the blood, blood glands and ductless glands, circulatory system, respiratory system, digestive system, genito-urinary system, and central and peripheral nervous system, with a more particular knowledge of diseases of bones and joints.

#### V.—*Medicine.*

A general knowledge of the ætiology, pathology, symptoms, signs and treatment of the more common affections and diseases of the different systems of the body, including:—

(1) Specific infectious diseases. General features of fevers—the mode of infection, the pyrexia, the stages of the fever, prophylaxis, immunity.

General knowledge of typhoid fever, scarlet fever, measles, chicken-pox, small-pox, mumps, whooping-cough, erysipelas, cerebro-spinal meningitis, diphtheria, pneumonia, tuberculosis, syphilis, actinomycosis, anthrax, glanders, tetanus, rheumatic fever, malaria.

(2) The intoxications—alcoholism, morphia, cocaine and other drug habits, lead poisoning, arsenical poisoning, food poisoning.

(3) The circulatory system—pericarditis, endocarditis, myocardial degeneration, valvular diseases, dilatation and hypertrophy of the heart, arteriosclerosis, aneurism, syncope.

(4) The respiratory system—Laryngitis, bronchitis, asthma, emphysema, bronchiectasis, gangrene of the lung, pleurisy, hæmoptysis.

(5) The alimentary system—stomatitis, tonsillitis, dysphagia, gastritis, gastric and duodenal ulcer, peritonitis, appendicitis, constipation, diarrhœa, colic, intestinal obstruction, parasites, diseases of the liver and gall-bladder.

(6) the Urinary System.—Various forms of nephritis, uræmia, renal colic. Abnormal constituents of the urine and their mode of detection.

(7) Metabolism.—Gout, rickets, diabetes mellitus, scurvy.

(8) The Blood and Ductless Glands.—The anæmias, leucocythæmia, purpura, hæmophilia, Addison's disease, myxœdema, exophthalmic goitre, acromegaly, adenitis.

(9) The Nervous System.—Cerebral thrombosis, cerebral embolism, cerebral hæmorrhage, paralysis of the motor and sensory systems, aphasia, monoplegia, hemiplegia, paraplegia, facial paralysis, neuralgia, neuritis, chorea, epilepsy, hysteria, locomotor ataxia, infantile paralysis, general paralysis, coma.

(10) The Skin; Commoner Affections of the Skin.—Herpes, eczema, impetigo contagiosa, seborrhœa, psoriasis, acne, ringworm, favus, scabies. Toxis eruptions.

(11) Prescription writing.—A knowledge of narcotics, sedatives, analgesics stimulants, antiseptics, emetics, &c.

*(To be Continued)*

## Societies

The annual meeting of the National Alumni Chapter of Psi Omega Fraternity will be held at the Southland Hotel, Dallas, Texas, Monday, November 10th. The executive committee will meet at 10 a.m. The general meeting will start at 2 p.m., and everyone is urged to be on hand promptly. A stag banquet will be held at 7 p.m. Reservations must be made by 4 p.m. Big surprise for those that attend.



# Editorial

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## Dental Equipment, Dental Supply Companies and Dental Manufacturers

Why do dental offices, and for that matter, professional offices, look so down at the heels after a few years occupancy? There is no gainsaying the fact since it has been commented upon by so many patients and visitors to such places. Too often the professional man leaves his office for the last time, after a life time of practice, with the same furniture, fixings and equipment with which he began. It is true there is such a thing as antique furniture which will last a lifetime, but there are few young men in America so outfitted at the beginning. It is a fair surmise that the office whose general appearance is going down hill that the technical equipment is also going the same way.

It may be said in defence that the professional man becomes so occupied with his purely professional duties that he does not study or give attention to the appearance of his office. It is also a fact that one's surroundings become so familiar that their gradual descent is not noticed.

Are good office appearances essentials in the practice of a profession? One is often struck by the humble surroundings of the world's greatest men and also by the splendor of financial institutions especially in the way of buildings, furnishings

and printing when there is neither honesty nor capacity behind them. And yet on the other hand, the surroundings and environment of a person indicate to a marked degree, the character of the person who occupies the premises.

While it is true in a general way that fine birds are dressed in fine feathers, there are very notable exceptions. A patient may enter a young dentist's office where is exhibited fine furniture, drapings and hangings, splendidly shining gas machine and sterilizer, but neither brains nor honesty in the conduct of the place, while on the other hand in humble surroundings a dental practice can be conducted, that will give the people a service far better than in the house of splendor.

As in all matters of life the selection of a Dental outfit and its maintenance is one of capacity to differentiate between essentials and non essentials. So it is with patients to select a suitable dentist to consult. What are the essentials in an equipment to practice dentistry?

Since dental teachers, dental authors, dental publishers and directors of dental societies get information from those most closely in touch with the majority of dentists, the traveling salesman, the DOMINION DENTAL JOURNAL ventures to make some observations to the dental supply business. This is not done without years of close touch with the general practice of dentistry. For convenience the subject under discussion may be divided into essentials, desirables and non essentials in equipment for the dentist. Dental furniture and furnishings, dental instruments and dental supplies make a fair division of the business.

The essentials in general equipment to practice dentistry are influenced by the state of dental education of the public and the practitioner, as well as the general demands of the community. The general practitioner should have a more extensive equipment than the specialist but not so complete in details. There seems to be a general tendency for dentists, and especially young ones, to get loaded up, with an equipment all out of proportion in cost to the demands of their practices. Dental supply companies too often tell young men and older ones as well, that without a good outfit they cannot succeed. Now here is the rub—the supply man's notion of a good equipment embraces chiefly furniture, furnishings and supplies, while the judicious dentist's idea should be to be equipped with the essentials that will serve a patient who needs a diagnosis and treatment. The dental salesman to-



day does not carry with him any of the essential lines of instruments—hence the dentist does not see modern instruments for diagnosis and treatment.

The patient of a general practitioner should expect to be received in a clean, well cared for room, with sufficient seats to be comfortable for the few minutes he waits. Antique furniture, gold fish, birds and Corots or Turners are not essentials, any more than electric engines, electric sterilizers, fountain cuspidors, units and X-ray machines. Too often a three or four thousand dollar outfit does not contain even one good workable syringe for injecting an anaesthetic, not to mention a hypodermic syringe and equipment for reviving a collapsing patient. Many such offices contain no instruments for injecting or lancing abscesses, removing impacted teeth, testing pulps, removing crowns or post puller capping pulps, removing pulps, inserting silicates or small spoon excavators for removing decay.

The engine equipment is often hopelessly neglected—not a stone, a drill, or sharp bur, not to mention a good arkansas stone. Not one office in a dozen has suitable instruments to treat peridental diseases, and as for laboratory equipment it is inadequate in almost every department.

It is not every one who has a real love for fine instruments, appliances and books. It is left to the few to enjoy such good company. It is a marvel that so many can throw away a book which they have read, studied, marked and underlined. There are many who become so attached to a fine instrument or appliance that they cannot lend it to another or give it away, for fear it might be wrongly used or treated. Until a dentist can have such feelings and admiration for his personal belongings, he will never have a complete equipment that will bring joy to his heart in its use. The writer once knew a dentist who spent many of his spare moments in the evenings in the company of his instruments, polishing, sharpening, repairing and testing them just as others enjoyed the company of the authors of good books.

## Notes

Dr. Bisnett has begun practice in Windsor, Ont.

The Red Cross Dental Clinic is operating in Yarmouth, N. S.

Ethylene is now being used as an anaesthetic for the extraction of teeth.

Halifax has given an invitation to the Canadian Dental Association to meet in 1926.

Dr. E. C. Boyle, Toronto, has been called to appear before the discipline committee of the board of directors.

Dr. J. Beland and A. Therrien have been elected governors for the Three Rivers Section to the College of Dentists.

Officers of the Nova Scotia Dental Association:

President—Dr. Oxner; 1st Vice-President—Dr. Roady; 2nd Vice-President—Dr. Melanson; Secretary—J. S. Bagnall, Halifax.

The Dental Board of Nova Scotia no longer accepts the degree of D.D.S. from Dalhousie University as sufficient to practise dentistry in the province. The Board will conduct its own examinations for admission to practise.

Officers of the New Brunswick Dental Society:

The officers for the ensuing term are as follows: President, Dr. G. T. Leighton, Moncton; vice-president, Dr. A. J. Coughlan, St. John; secretary, Dr. Frank A. Godsoe, St. John.

The annual meeting of the Nova Scotia Dental Association was held at Wolfville, N. S., July 16 and 17, 1924.

Dentists in attendance at the Wolfville meeting, N.S., July, G. N. Stults, K. F. Woodbury, F. W. Ryan, G. K. Thomson, W. W. Woodbury, R. H. Woodbury, G. A. Chudleigh, F. W. Dobson, S. G. Ritchie, C. H. B. Climo, H. S. Crosby, F. W. Johnson, G. R. Hennigar, A. W. Faulkner, W. H. S. Gray, W. C. Oxner, H. S. Tolson, J. S. Bagnall, Halifax; E. S. Allen, T. Melanson, A. C. Harding, Yarmouth; A. F. Hogan, Weymouth; L. B. Roop, Bear River; E. M. Reid, Middleton; F. L. Comstock, W. T. Cook, Berwick; M. P. Nicholls, Aylesford; J. T. Roach, V. Primrose, L. E. Eaton, Wolfville; A. B. Crowe, C. S. McArthur, Truro; H. A. Clay, Parrsboro; K. P. Johnson, New Glasgow; J. P. Parker, A. B. Anthony, Berwick; L. St. C. Cameron, Antigonish; M. E. Morrison, Canso.



Dr. W. O. Butler, of Wilkie, Sask., will shortly retire from practice.

Dr. George McKinley, who left Toronto to practice dentistry in California, died May 30, 1924.

The cost of equipping the new dental clinic at Trafalgar Public School, London, will be one thousand dollars.

Dr. Beckwith, Halifax, N. S., had the misfortune to lose his motor car by fire after running over an embankment near Halifax.

The Royal College of Dental surgeons of Ontario graduated 184 students in dentistry and 11 dental nurses at the regular convocation, 1924.

The council of Sydney, N. S., passed a resolution to discontinue the dental clinic unless a dentist could be secured at a less salary than \$3.00 per hour.

Dr. Trelford of the R. C. D. S., Toronto, will address the Dental Society of Europe on Dental Pathology, at its annual meeting in Amsterdam, Holland.

University Masonic Lodge entertained the visiting brothers at the Ontario Dental Association meeting under the Right Worshipful Bro. Dr. J. A. Slade.

Miss Angela Magee, St. John, N. B., daughter of James M. Magee, received the degree of D. D. S., from Dalhousie University at the recent convocation.

Officers of the Ontario Dental Association:

President—W. G. Thompson, Hamilton. Vice-President—J. Devitt, Bowmanville. Archivist—C. A. Kennedy, Toronto. Secretary-Treasurer—J. A. Bothwell, 3 Bloor East, Toronto.

The following candidates writing for dental license under the University of Manitoba in June were successful in the subjects indicated: Oswald Brewer, part I complete; W. J. Arnold, part II complete; F. G. Borbridge, prosthetic dentistry and orthodontia; A. J. Gardner, practical operative dentistry; Hyman Greenberg, practical operative dentistry; A. W. Holden, practical operative and practical prosthetic dentistry; C. W. Zilz, materia medica, prosthetic dentistry, dental medicine and surgery and orthodontia.

Dr. J. R. King will begin practice July 1st in Kincardine.

Dr. R. Bier, Winnipeg, was one of the essayists at the annual meeting held in Moose Jaw, Sask.

Dr. Muir of Halifax deplored the fact that anaesthetics were not manufactured in Canada as they were years ago.

Buffalo Dental Study Club spent three days with Dr. Harold Box in the study of Pathology and Diagnosis in Toronto, July 7-8-9..

Dr. Harry W. Weagant is opening a dental office in Cornwall, Ont., the home of his father, who was so well known in dentistry in Canada.

Public health clinics were held in thirteen locations in Yarmouth county, N. S., during June and July. Dr. A. B. Anthony was the dental member of the clinical staff.

Miss Alice Nelson of New Britain, Conn., a graduate of Forsyth Dental Infirmary, Boston, has been engaged as dental hygienist of the Laurentide Health Service, Quebec.

Dr. E. C. Campbell was elected president of the Saskatchewan Dental Society for the year 1924-5, at the Moose Jaw meeting. Dr. D. J. Ferguson was elected secretary.

Dentistry Graduates—Fifteen Canadian students received the degree of doctor of dental medicine from the school of dentistry, North Pacific College of Oregon, at Portland, Ore., June 2. Of this number John D. Calvert, Nelson C. Davidson, E. L. Morgan, C. M. Pineo and L. B. Warnicker come from Victoria. Those coming from Vancouver are W. E. Alexander, R. B. Archibald, John T. Dawson, Israel Franks, F. G. M. Hanna, John H. McArdle and Issidor Snider.

In his address to the Sixth Session of the Dental Board of the United Kingdom, Mr. Acland devoted a considerable space to the subject of finance.

We note that the estimated early income of the Board is £45,000, and it is not thought likely that this figure will vary very much for some time, provided that the annual retention fee remains at the present figure. Against this income the sum of £12,000 is required to meet the standing charges, and £12,500 is ear-marked for educational and research work other than bursaries. Of this, no less than £6,000 is devoted to re-



search. We hope most sincerely that this item of expenditure may justify itself in conferring tangible advantages to the members of the dental profession who, after all, have to pay the piper. . . .

The balance of £20,500 is to be devoted to bursaries, and it is estimated that this sum would provide bursaries for forty students each year . . . .

The Propaganda Committee made the following recommendations, which were adopted by the Board:—

1. That the Board of Education be invited to receive a deputation from the Dental Board with reference to the institution of suitable instruction in oral hygiene in primary and secondary schools.

2. That, when the Royal Commission on the National Insurance Acts has been appointed, evidence should be given before the Commission on behalf of the Board with reference to the need of extending the present provision of dental treatment under the Acts.

3. That authority be granted for the initial expenditure of a sum not exceeding £50 on the purchase of suitable films.—*British Journal of Dental Science.*

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# Dominion Dental Journal

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## What Teeth Should Be Extracted, and What Teeth Should Be Saved?

By C. N. JOHNSON, M.A., L.D.S., D.D.S., M.D.S., F.A.C.D.,  
CHICAGO, ILLINOIS.

*(Read before the Ontario Dental Association, May 26, 1924)*

It may as well be recognized at the outset that it is wholly impossible to answer the question implied in the title of this paper in any definite and brief statement of fact or opinion, unless we content ourselves with the terse and off-hand assertion that all teeth should be extracted which cannot be made healthy by treatment, and all teeth should be saved that are amenable to successful scientific management. The difficulty is to-day that there are a large number of teeth which are on the borderline between safety and danger, or rather there are so many teeth of which no man can state with assurance whether or not they are safe or dangerous. The dental profession must have a keen conception of the possible damage that may be done by diseased and neglected teeth. We must stand "four square to the world" in our protection of the people against the ills which may arise from the presence of focal infection. We must recognize the complexity of the human organism, and the possible far-reaching effects of metastatic involvement. We must not close our eyes to any of the agencies of evil connected with the mouth and teeth.

Having formulated this as our bounden duty, there is another side to the picture. The history of the development of the present concentration on the teeth as factors in disease has many peculiar angles. From the time that dental literature began to be written our writers have sought to interest the medical profession in the teeth, and to impress them with their significance as agencies for good or ill. That for

many years our medical men paid very little attention to the matter is not to be wondered at. They were chiefly concerned with what seemed to them the weightier questions of tuberculosis, cancer, cholera, smallpox, typhoid fever, diphtheria, etc.—those outstanding diseases which were carrying people off in spite of their best efforts. In the face of all this alarming array, it was not to be expected that medical men should give so very much attention to such minor matters as the teeth.

But a very curious thing happened. One of their own members—Sir William Hunter, of London, England—wrote a paper on the Evils of Oral Sepsis. It was so striking in some of its assertions, and so emphatic in its declarations, that it at once commanded the attention of both medical men and dentists. Incidentally it raised some resentment on the part of dentists because of the almost sweeping indictment against dental operations in the form of crowns and bridges as the chief causative agencies in many systemic diseases. He euphoniously called them “gold traps of sepsis,” a name which was probably not far misplaced in the class of work which he was accustomed to see. The element of injustice which entered Sir William Hunter’s discussion of the subject related to his broad condemnation of what he termed this so-called “American Dentistry”; when as a matter of fact the grotesque and abominable restorations which emanated from the London dental parlors which styled themselves “American,” were no more representative of the better class of American dental practice, than would the perverted aberrations of the veriest medical quack represent the service of the ablest and best of the medical profession. The distinguished author may not in any sense have been responsible for the misconception, but that it was a misconception there can be no question.

But the most curious thing connected with the entire situation is this, that while Hunter is acclaimed and justly so, as the man who first directed effective attention to the mouth and teeth as important agencies in disease, the kind of infection that medical men and dentists are most afraid of today was never in the remotest degree alluded to by Hunter at all. What he declaimed against were the accumulations and septic conditions at the gum margins due for the most part to the irritation of ill-fitting bands on crowns, and the retention thereby of infectious material. He speaks of swabbing the mouth in these regions with antiseptics as a remedial



measure, but he never refers even incidentally to infections occurring in the apical regions at the ends of roots of teeth. It is these latter which have given rise to the greatest concern in our ranks to-day, and over which there is the most widespread confusion.

With this as with most questions affecting the welfare of the people we serve, what we most need is balance; and balance is the one thing which in the recent past has been most conspicuous by its absence on the part of many practitioners, both medical and dental, when approaching this matter of focal infections about the teeth. The moment the attention of the medical profession became concentrated on the teeth as possible causative factors in disease, there began a terrible landslide which has swept countless numbers of perfectly good serviceable, and innocent teeth to destruction. There is no gainsaying this statement—it is a profound and lamentable fact. In its net results it constitutes one of the dark chapters in our professional history; and yet in contemplating the circumstances which brought it about and the gravity of the issues involved, it gives rise not so much to censure as to sorrow. It speaks merely of the limitations of human judgment and the uncertainty of much of our so-called scientific knowledge.

Let us be frank; let us be honest; let us weigh this matter in the light of the calmest judicial evidence. Even then it is inevitable that we shall make mistakes, but we shall at least not work the hideous ruin that has trailed in the wake of many a professional practice in recent years. The thoughtless, needless, worthless extraction of good serviceable teeth is no light matter, any more than is the retention of diseased teeth that are a menace to health. Let us be broad-minded and open to conviction, but let us not be stampeded out of our common sense, based on observation and experience, by the far-flung cry of every excited enthusiast.

There should be no controversy between medical men and dentists over this important question—there should be only the frankest discussion, and the most cordial helpfulness one to the other. If dentists on the one hand feel that medical practitioners too frequently condemn teeth without due deliberation they must remember that the prime function of the medical man is to get his patient well, and that whatever seems to him to stand in the way must be eliminated. If the dentist knows for a certainty that the medical man in his concentration on the teeth to the exclusion of many other possible

factors in disease, is in the habit of ordering the extraction of many useful organs of mastication to the ultimate detriment of the patient, it is his duty to call the physician's attention to this fact, and reason with him on the possible harm he is doing. Papers by medical men should be read before dental societies, and by dentists before medical societies. The paramount thing is the welfare of the patient, and this can be conserved only by the right kind of co-operation.

If it is true that medical men can legitimately claim a wider field of knowledge than that possessed by the dentist, it is equally true that dentists may legitimately claim a more intimate knowledge of the teeth and their supporting structures than can the physician. Neither physician nor dentist can claim infallibility about anything, and thus the attitude assumed by some physicians in ordering teeth extracted without consultation with the dentist is not only illogical, but in many instances it has proved disastrous to the patient. In a situation in which no man may claim absolute knowledge it is well that we "make haste slowly," and this brings us at once face to face with the main theme of the present paper, what teeth shall be extracted, and what teeth shall we attempt to save?

In deciding this question several errors are likely to creep in, one of which is that too many practitioners wholly ignore the fact that there is any difference in the relative value of importance of different teeth. The strategic position of a tooth may well be considered, and may logically be a factor. The ease or difficulty with which a vacancy caused by the extraction of a tooth can be filled by artificial substitutes must have some bearing on the decision. If a central incisor is under suspicion, and the other teeth in that vicinity are sound, we are justified in pausing before we extract the central and thus create a condition which is hard to remedy without placing the adjacent sound teeth in jeopardy. There are various situations which render the extraction of a tooth a rather serious matter. We cannot simply wave our hand across some x-ray pictures and say that certain teeth should be extracted without a further study of the case to see what may be involved in the loss of these teeth.

Of course, the rejoinder to all of this will be that if a tooth or teeth are causing systemic trouble they should be sacrificed no matter what their strategic importance, and this would seem to be an unanswerable argument. It surely would be unanswerable provided it were possible for any man



to say with assurance that a certain tooth was causing systemic disease, but up to this time no man can consistently claim such infallibility. Every tooth that has been extracted for the purpose of curing systemic trouble has been extracted solely on suspicion. No man to-day is wise enough with all his bacteriological tests to say in advance what the extraction of a tooth will do for a patient. It is true that in many cases the suspicion has been well founded, and the patient has been benefited by the extraction. It is true that there are many teeth where the presumptive evidence is so great that there should be no hesitancy about extraction. It is also true that there are some teeth whose strategic importance and functional value is so nearly nil that in case there is the slightest suspicion that they are doing harm they should be taken out. We should use judgment, and not be prejudiced one way or the other. But here is a very significant fact that we cannot ignore, and which should have a bearing on our decisions. It has just been said that in many cases the extraction of the teeth has benefited the patient, but unfortunately the evidence in rebuttal goes to show that there are just as many cases in which the extraction of the teeth has apparently done the patient no good whatsoever. There are altogether too many edentulous mouths to-day—made so in the fruitless effort to cure a disease which continues to progress in spite of the mutilation of the mouth—scores of disappointed patients who have been promised surcease of their troubles by yielding up their teeth. And then there are other cases where patients have been cured of their ailments and retained their teeth—retained them against the advice of their physician. At least, this may be said—there is as much evidence on the one side as on the other, and until we know more about the subject than we do to-day we are not justified in sacrificing so many teeth as we have in the recent past.

This does not mean that we are to ignore the possible evils of infected teeth or that we should settle down into a smug complacency regarding this most serious question. We should go into every case with the most conscientious endeavor to do whatever thing shall be the best for the patient, after weighing all of the evidence at our command. And this leads us at once to the consideration of certain evidence which in the past has been relied on more than any other in passing judgment on teeth. For good or ill the x-ray has been the chief medium by which men have formed their opinions of the

teeth, and there is no estimating to-day the aggregate of good or of harm that has been done through this medium.

The value of x-ray evidence has been sufficiently discussed to make it unnecessary to enter on it here, except perhaps to reiterate some of the things that have been said concerning it. At least we may be assured of one thing that as a medium of detecting infection at the apices of roots of teeth the x-ray is almost wholly a failure. It does not demonstrate an abscess, it does not prove infection, and it does not show pus. We might as well recognize this at once. The only thing the x-ray does is to reveal the varying degrees of density in bone around the roots of teeth, and in many instances it does even this imperfectly — largely, it may be said, through imperfect technic in its use. But with all of its limitations it is a most important adjunct to our various means of diagnosing trouble with the teeth and their supporting structures, and taken at its face value we may still reap great benefit from its use provided we do not make the prevalent blunder of expecting from it the miraculous.

When the x-ray reveals a perceptible shadow at the apex of the root of a tooth we at least know that something has happened, but the significance of what has happened or the present activity or inactivity of any possible destructive process cannot be determined by any man living through x-ray evidence alone. And I think we might go even farther and say that it cannot be determined with certainty by any evidence which we at the present time have at our command. We are groping more or less in the dark and with all due respect to an honorable allied calling, so also is the physician. Let us be honest. Let us face our patients with the frank admission that in many cases we do not know. Let us admit that we are merely doing for them the best we can under our limitations, and that we do not claim infallibility. Let us freely acknowledge that we have only a ray of light here and there, with the great broad expanse of dental pathology still largely unilluminated. If we do this it will be better for us and infinitely better for our patients.

And now with all of these limitations clearly in mind, let us approach a more concrete consideration of the main theme of the present paper. It is often a difficult matter for the conscientious dentist to determine whether he should extract a tooth or attempt to save it. Leaving out of consideration for the moment the attitude of the patient's physician toward this question, and the effect of this attitude on the patient's



mind; we may well consider several factors which should govern our decision. The gravity and persistence of the patient's illness would be one factor. If a patient were seriously ill over a protracted period from a disease which might logically be attributed to focal infection, and there were teeth which showed rarefied areas, we should not take the responsibility of retaining those teeth with the possibility that they might be doing harm. They should be extracted, even though their extraction is admittedly an experiment. But if the illness is recent and not critical, if it is only an occasional rheumatism or neuritis, and the teeth happen to be of strategic or functional value we should not extract them merely because the radiogram shows a slight rarefied area. I am aware that this advice will be considered the rankest heresy in the light of present-day procedure, but I am willing to go on record and trust future developments to convict or acquit me. I would not extract a valuable tooth without making the attempt to treat it and save it. I conscientiously think that the extraction of a good, serviceable tooth to be an acknowledgement of therapeutic failure on our part. I admit that all pulpless teeth cannot be successfully treated and saved, but I claim that a vastly greater number can be so treated than have been in the recent past. I think that the day will come when we will look upon the present era of dentistry as one of which we may well be ashamed. We have been stampeded out of our sanity by this hue and cry of focal infection. We have followed the leaders over the fence of fanaticism till we have become lost in the wilderness. We have permitted patients to become frightened out of their senses by this bugbear, and we have created more unhappiness than we have health. The crime of the psychological effect on patients by the alarming terms that have been rung in their ears will never be atoned for. No dentist, and no physician has the right to frighten patients needlessly, and patients have been so frightened times without number. Let us be honest.

I am not seeking to minimize the ills of focal infection. I will go as far as any practitioner to clear up a mouth and make it healthy, but that does not mean that I will extract every pulpless tooth that has a rarefied area at its apex. And let me make this further brief observation about focal infection. Since it is so much in the professional mind, and its ills have been so emphasized, might it not be legitimate to ask its real significance? Might it not be well to look a little further into it and see whether it is a cause or an effect? Might

it not be the result of some fault in the organism, in other words, might it not be secondary instead of primary? Might there not be a basis of nutrition and metabolism back of all of this? Are we not approaching these affections entirely from the wrong point of view? When we impress people with the proper methods of living; when we teach them what to eat, and how to breathe, and particularly how to *think*; we shall do more to eliminate disease than we shall by extracting all the pulpless teeth in all the mouths of all the people. And let me further say that in many of the cures attributed to the extraction of teeth, I am convinced that much of the benefit has come through the fact that the patient has been wisely advised by the physician about better modes of living. Their ailment has brought them face to face with the necessity of taking better care of themselves—eating more rationally and living more rationally. And much of the benefit has come from this.

The entire question of the extraction or saving of teeth resolves itself down to a matter of common sense. We should look broadly over the whole field and trust at least as much to our clinical experience, as to bacteriological findings and x-ray pictures. We know really so very little, and the thing we think we know to-day is proved a fallacy tomorrow. Let us not set up an edict of infallibility, and above all, let us not needlessly frighten our patients to death by parading before them a theory which has yet to stand the test of time.

Let every man approach this problem in the light of his own experience, doing conscientiously what he believes for the best interests of his patient, unbiased by the clamor of the crowd, and unswerved by every new theory that is advanced.

We may thereby make mistakes, but the aggregate harm will be less by far than that done to too many people by some of the methods in vogue in the recent past.

#### DISCUSSION.

Dr. A. E. Webster then addressed the Convention as follows:

Mr. President, Ladies and Gentlemen, and Dr. C. N. Johnson: I thank you very much for this kind reception. I only wish I could measure up to your enthusiasm. I deem it a great honor and pleasure to have the opportunity of discussing a paper so ably prepared by my old teacher. There were two men who stood out in my student days very highly—they were Dr. C. N. Johnson and the late Dr. Willmott. These two



men were examples to me of what an educated gentleman ought to be in this life.

I congratulate Dr. Johnson, and I congratulate the Society for having this presentation this afternoon upon a subject which is very difficult, for nobody wishes to step out as Dr. Johnson has and say what he thinks. I remember when Dr. Johnson read a paper before the New York Dental Society at the time of the craze on analgesia. Everybody had to have an equipment. And I remember Dr. Johnson gave the idea that dentists of skill did not need elaborate equipment for dissensitizing dentine. Dr. Johnson had the courage at that time when the stampede was for Analgesia to stand out for balance and sanity; he has the courage to stand out to-day when the stampede is for extractions.

In the discussion of the subject Dr. Johnson did not get to very concrete problems, so that it leaves the question wide open for us to proceed as we please. He did make the concrete statement that he would not extract every tooth which shows a more or less rarefied area at the apex. Now I believe that the sane general practitioner will concur in that. Why should anybody concur in that in the face of such evidence in the opposite direction? Well, no person has practiced dentistry for a number of years without having recognized some of these teeth which showed rarefied areas having recovered and the patient having good health over a period of years. The most significant thing I have seen presented was that by Dr. Charlie Pearson before the Academy of Medicine, when he showed that the ordinary treatment had cleared up what had appeared to be an abscess at the end of a root, and remained healthy and useful over a period of twenty to thirty years. It is a fact that the ordinary treatment—we were taught years ago—stands good to-day.

Now then, on the other hand, you will notice Dr. Johnson was very careful to say he did not have any quarrel with the man who believed that teeth caused systemic diseases.

How shall we deal with border line cases? I believe in dentistry we have not proceeded logically or properly in this regard. The dentist sees what he is going to do and decides it in about two and half minutes while the general medical practitioner will spend days and days in reading up before he will come to a conclusion, while we come to a conclusion in a few minutes. Surely ours is a shot gun method of diagnosis. We must do better than that, and in order to do better, I believe there is no plan better than what has been established

in medicine for a number of years. They proceed in an orderly way and make a diagnosis. We treat without a diagnosis.

So we start off then with the idea that we will take a family history. If we are going into a case at all, we will take the general history of the patient, and we will take the local or dental history of the patient. The Dental History will involve:

The condition of dental caries.

Peridontal disease.

Deformities and

Accidents.

The medical history you will get in consultation with the physician.

After we have made a general diagnosis we may proceed to determine the dental aspects, and the most important of all, after dental caries, is the condition of peridontal membrane.

When a patient is sick and sent to a dentist because of some illness it is the dentist's duty then to enquire or to know from the physician from what disease the patient is likely suffering, and in full knowledge of that proceed as he would with an ill patient, not proceed as he would with a healthy patient.

Now Dr. Johnson did not limit his patient; in some cases the tooth with the rarefied area at the end ought to be removed and in some cases not. If that patient should be suffering from tuberculosis, syphilis, chronic rheumatism, anaemia and perhaps diabetes, the tooth ought to be removed. These are properly classed as really serious systemic diseases and teeth under those circumstances should not be left even on suspicion.

Now I have classified here a few of the conditions under which teeth ought to be removed.

Extract every tooth from which infection cannot be removed and the tooth made comfortable and useful. If the tooth continues to be infected and the patient is not normally healthy or it cannot be made useful and comfortable, then remove the tooth. I am making these specific so that you may discuss them.

Extract all teeth which serve no useful purpose in the mouth. Occasionally the upper or third molar is such a tooth. Now occasionally it is not. Keep that in mind. It



may serve a very valuable purpose in holding the second molar from drifting distally or retaining a denture or bridge.

Extract every tooth with pulpitis whose pulp cannot be removed and the canals properly filled as may occur because of position, location of the tooth, or because of anatomical form of the tooth or physical condition of the patient.

Extract every tooth which is the seat of acute apical periodontitis or peri-apical abscess if the pain is intolerable and cannot be otherwise relieved, or if there are grave systemic symptoms or if there is reason to believe that there is such a destruction of the peridontal membrane that the tissues will not return to a normal condition. Example: Upper lateral, Incisor carrying a porcelain crown. I would not bother taking that crown off if there is peridontal membrane destruction.

Extract every tooth root which has been the seat of one or more acute infections or a chronic infection extending over some years which has detached any considerable portion of the peridontal membrane or rendered the tissues of the root dark or grey in color.

Extract every tooth from which there has been lost by disease a half of the peridontal membrane, beginning at the apex.

Extract all teeth with exposed pulps, infected teeth or paining teeth for patients suffering from syphilis, tuberculosis, endocarditis, general septicemia, severe arthritis, sever anaemia or diabetes. Extrart every tooth with a dead and infected pulp whose root end is not normally closed, except upper incisors, because as Dr. Johnson has explained these may be successfully treated, you know in years gone by when Dr. Sparks came here to the Ontario Dental Societies and showed models in which he said you should extract some sound teeth for the advantage to young patients, and there are some to-day who are of the same opinion. I wish to read this as having been presented by one of the staff of Orthodontists of our School:

*“Extraction of first permanent molars:*

“If the deciduous teeth are in place and will hold the bite in normal separation, and the second molars have not erupted and two lower first molars and one upper first molar must be extracted then remove all four or if two lower first molars are to be lost remove all four, but if two uppers are to be lost do not extract the lowers.”

“Why? The lower teeth are the guide to the uppers. They come in first and direct the uppers to their position.

“If two molars on the same side must be extracted do not extract the teeth on the other side but if a molar on the lower left side must be lost and one on the upper right side, extract all four. If the only teeth keeping the bite open are first molars, retain them until the bicuspid or the second molars come into normal position, then determine whether to extract or not.”

You see, interposed Dr. Webster, if the first molars are keeping the bite open then do not remove them until the second molars come in, then determine what to do.

Dr. Webster continued: Before teeth are extracted it should be known that they are the cause of disease either local or general. Let us get *that*: before teeth are extracted they must be known to be the cause of disease either local or general. If we would just stay there we would not take out so many teeth. No physician or surgeon would be blameless if he recommended the removal of the appendix, the foot or the hand because of suspicion. A diagnosis would have to be made before action, but when it comes to the teeth hundreds are extracted daily on suspicion only. Often without either Dental or Physical examination.

Patients sent by a physician to a dentist for dental examination should carry with them a report which would indicate what physical ailment they complain of, because the kind of dental operation depends primarily upon the physical condition of the patient and secondarily upon the anatomical form and position of the tooth involved, the age, sex, occupation, and the state of the peridontal membranes of the teeth help in the determination.

A dental diagnosis involves a complete understanding of the fundamentals of health and disease just as much as a diagnosis of the condition of any other part of the body. There is the family history, the personal history, the history of the present complaint, the Dental history past and present. Occasionally both Dentists and physicians act as if there were only one of two things to do—extract a tooth or fill it. When it has been determined that a tooth is the seat of infection and the peridontal membrane is good enough to warrant the retention of the tooth there are several methods of practice open each of which will relieve both local and general symptoms. The choice of method is of some consequence because upon it, success or failure depends. It is the condition of the mem-



brane that determines the method. If the canal is freely opened and the apical opening normal and little soft tissues involved, as revealed by the history and the x-ray, then the simple medical treatment which we have used for 40 years is indicated. If the peridontal membrane is not stripped from any considerable portion of the root-end, though there is extensive involvement still, medical treatment is the best.

Now you know we get an idea that because there is quite a large involvement that the tooth must be removed. Not necessarily at all. It is the involvement of the peridontal membrane. Outside of the peridontal membrane there may be considerable involvement.

The satisfactory results obtained in cases of known general disease, by Dr. C. E. Pearson, Toronto, shows at once the value of this old and tried method. The establishment of a sinus, so infectious materials may be washed away, is effective where the disease has been long standing. Curretment is suitable if some membrane is involved and of long standing. All root-ends denuded of membrane should be cut off. I don't believe in that grand-stand thing of cutting about half the root off, there is not much left to hold the crown. But I believe that curretment cures systemic diseases as much as if the root was removed.

As a rule general diseases are more liable to follow chronic apical infections of teeth than from a similar amount of infection found around the necks of teeth. Many extensive gingival infections cause little or no disturbances, while in a few notable cases marked systemic affection have cleared up from local treatment, about one or two teeth. While it is true there are many errors in diagnosis of the condition of the apical tissues, it is equally true that there are more frequent errors in diagnosing the condition of the gingival tissues.

Dr. Johnson then closed the discussion, expressing himself strongly that of course under certain conditions, that is where the patient was suffering from some real deadly disease he would not hesitate about removing suspicious teeth. I would not pose, he said, as placing the welfare of any patient in jeopardy because of the retention of a tooth. What I complain of is this, and I am not criticizing the dentists or medical men of Chicago, but there has been in the last few years a routine there that is exceedingly trying to honest, conscientious members of the Dental profession, and I will give you one illustration. I don't like to recite cases, but I could stay

here all day and recite cases that are a disgrace to medicine and dentistry.

Dr. Johnson then related that because of a statement he had made that x-ray pictures were not always conclusive evidence he had been deluged with letters from all over the country, and incidentally a friend from Denver had recently sent him along with the radiographic evidence, the statement that a medical man said this patient must have some teeth extracted. This friend told Doctor Johnson that the patient had gone under a physical examination by the physician and was found normal. But the patient had said: "Recently I have lost my pep a little." The x-ray man had sent him to the physician and the physician had sent him back to the dentist. The evidence and history, said Dr. Johnson, was sent to me and I said: If those teeth were in my mouth I would leave them there. I said: You better tell your patient to look after his diet a little bit, get some exercise and forget it. I did not think my friend would show the letter to the patient. However, he wrote me and said: You know I showed your letter to the patient. He came into my office, feeling dumpish, and when I showed him your letter he braced up and went out of the office feeling fine. Not only that; I showed it to the physician, who said: "That is a common sense view of that patient." Ninety-nine physicians out of a hundred, said Dr. Johnson, would have said his lack of ambition was due to those teeth and he must have them out. Now it is cases of that kind that I am complaining about. I don't look lightly upon a grave affection that is likely to end in the death of the patient, but I will tell you, Gentlemen, it has grown to be a habit with too many physicians to condemn the teeth when there is some slight ailment without looking farther for the cause and patients have had so much harm done them in this way that it is getting to be my religion to fight that thing. I think it is about time that the Dental profession had some heart and soul and conscience and were willing to stand up for their convictions.

Dr. Johnson then further related how after expressing himself strongly to this effect at a meeting at Chicago one night, an ex-president of the Chicago Dental Society came up to him and shook hands and said: "I am awfully glad you said that thing." I said, he continued: "What is the matter with you." He said: "I feel the same way about it, so do others, but we have not the courage to say so in public." He said: "I feel strongly about it, they got five of my teeth. I was



having some trouble with my feet, and the physician looked me over and said: "Those teeth of yours, you have to have them out." I had them out, and after allowing a sufficient length of time for the effects to make themselves felt, I went back to the doctor and told him it had not helped me at all. I said: Doctor, I want to tell you something, so that you may not make the same mistake again; having those teeth out has not helped me one particle. Do you suppose that pleased him? Not for one minute. He said: "Then it is your appendix." I said: I had it out fifteen years ago. He then said: It is an abscess in your kidney. Well, I said: Doctor, I came to you with the best of spirit to try and give you some light upon the subject. You can't put a knife in me.

Well, he said: I went to a shoe man who fitted my feet properly with a shoe and I have been comfortable ever since.

Those are not isolated cases, continued Dr. Johnson: they are repeated hundreds and hundreds of thousands of times, and I want to tell you the public has been exploited by the medical men and the dentists till it has put me in the mood where I feel like fighting the battle for the patient. On the other hand I will not allow in the patient's mouth a tooth in which I can come to the conviction, after the kind of investigation that Dr. Webster has mentioned, that that tooth is a menace. But that does not mean that I will take the physician's Say so when he writes it upon an order and gives it to the patient without due deliberation. There is not a medical man who knows and there is not a dentist who knows some of these border line cases, and it is these border line cases which we ought to take to heart, and there is a rule which I have tried to follow out in these cases: "How would you feel about that if it was in your own mouth?"

This winter there was a gentleman who was known from one end of the country to the other, one of our best literary men, who began to feel like the patient in Denver—he was losing his pep a little. They got at him with some x-rays. One of his closest friends, a physician in Chicago, ordered some teeth out.

He came into my hands. I told him I did not agree with the diagnosis. That man told me this: I happen to know this physician so that I can call him by his first name: I said: you are an older man than I am by many years, you have a whole lot of pulpless teeth in your mouth. Why don't you have them out? The physician merely smiled and shrugged his

shoulder, without comment. The attitude toward tooth extraction is often vastly changed if the tooth happens to be in our own mouth.

## SELECTIONS

### Dentistry in Great Britain

*(Concluded from August Issue)*

#### VI.—*Surgery.*

- (1) Acute and Chronic Inflammation.—Causes; local and general signs and symptoms; treatment.
- (2) Acute and chronic abscess, sinus and fistula, boil, carbuncle.
- (3) Sepsis.—Sapraemia, septicæmia, pyæmia, ulceration, gangrene, erysipelas, cellulitis.
- (4) Tuberculosis, actinomycosis.
- (5) Syphilis.—A general knowledge of the disease and a special knowledge of its manifestations in the mouth.
- (6) Tumours, innocent and malignant. Cysts.
- (7) Wounds.—Process of repair, burns, syncope, shock, collapse, tetanus.
- (8) Asepsis. Antisepsis.
- (9) Blood Vessels.—Injuries, hæmorrhage, hæmophilia, thrombosis, embolism, aneurism, varicose veins, nævus.
- (10) Lymphatics.—Affections of lymph glands.
- (11) Nerves.—Injury, inflammation, tumours, paralysis.
- (12) Bones.—Fractures, organismal infections and their results, tumours.
- (13) Joints.—Sprains, dislocations, organismal infections.
- (14) A general knowledge of the injuries and diseases of the head and neck and of the viscera, and a special knowledge of surgical affections of the face, mouth, lips, tongue, palate, gums, jaws, tonsils, fauces, salivary glands, nose, pharynx, œsophagus, larynx, trachea.
- (15) Anæsthetics, local and general.

#### VII.—*Chemistry as applied to Dentistry.*

(1) The non-metallic elements with their more important compounds. Special reference to fluxes, clays, porcelain, carborundum, sand, diatomite, pumice, emery, corundum, glasses. Peroxide of hydrogen, nitrous oxide, eusol.

(2) Atomic theory. Properties of solutions, colloidal solutions, electrolysis, ionization, dialysis. Electroplating with silver, gold and nickel. Periodic Law. Radio activity.

(3) General Properties of the Metals.—Alloys, freezing points, eutectic, solid solution, homogeneous mixture, chemical compounds, electro-chemical series of metals. Effects in alloys of arsenic, antimony and phosphorus.

The following metals, their preparation, properties, oxides and more important salts and alloys:—

Potassium, sodium, ammonium, calcium, barium, magnesium, aluminium, zinc, cadmium, manganese, iron, chromium, nickel, tin, lead, arsenic, antimony, bismuth, copper, mercury, silver, gold and platinum group.

Special reference to forms of calcic carbonate. Fluor spar, calcic sulphate. Magnalium, duralumin. Artificial stone. Talc-cements, alums, mordants, thermite. Aluminium alloys. Clays. Translucent cements. Zinc oxychloride and oxyphosphate. Brass, Muntz metal, German silver, cadmium alloys. Fusible metals. Wood's alloy. Ferrous and ferric salts, rouge, Spence's metal. Steel. Manganese, nickel and chrome steel. Oxides of tin, putty powder, bronze, bell metal, pewter, soft and hard solders. Oxides of lead, white lead, red lead. Alloys of lead with tin and antimony.

Separation of silver from lead. Pattison's process, Parkes' process. Alloys of antimony and bismuth. The two oxides of copper. Electrotyping. Alloys of copper with silver, gold, manganese, antimony, tin, zinc and aluminium. Gun metal, Prince's metal. Mercurous and mercuric oxides and



salts. Purification of mercury. Dental Amalgams. Vermilion. Silver oxide, purification of silver. Reduction from silver salts. Photographic processes. Alloys of silver with gold, platinum and palladium. Chemistry of cyanide process for gold. Varieties of gold used in dental work. Alloys of gold. Chemistry of process for separation of platinum metals. Spongy platinum. Alloys of platinum, silver, gold and iridium. High fusing solders. Qualitative analysis of all preceding metals with tests for the mineral acids. Marsh's test, Reinsch's test.

(4) Organic Chemistry.—Classification of organic compounds. Hydrocarbons, carbohydrates; organic analysis, empirical, rational, and constitutional formulæ; methane and ethane; ethylene and acetylene; methyl and ethyl alcohols, aldehydes, ketones, acids; ethers and esters; ethyl chloride—glycerol; fats, oils, and soaps; chloroform; iodoform; chloral; acetone; lactic, tartaric, acetic, and citric acids; cane sugar; glucose; starch; dextrin; lactose; cyanogen and its compounds; benzene; phenol; salicylic acid; urea.

Elementary knowledge of the following Alkaloids.—Morphine, quinine, strychnine, cocaine, novocaine, eucaine, butyn-phenols, thymol, eugenol. Rubber, vulcanizing. Modelling compounds, chemistry of antiseptics and anæsthetics.

#### VIII.—*Physics as applied to Dentistry.*

(1) Molecular physics, atomic and molecular systems; ions; energy, transmutations and conservation of energy; determination of units; mechanical powers; states of matter; properties of and forces exhibited in solids, liquids and gases; vacuum and pressure pumps.

(2) Heat.—Temperature, mechanical equivalent; expansion of solids, liquids and gases; changes of state and other effects; conduction, convection, and radiation; vapor pressure, vapor density; specific and latent heat; sublimation, distillation; heat engines, high-pressure boilers, furnaces.

(3) Light.—Radiation; reflection; refraction; lenses; microscope; photochemical and photo-electrical actions; the spectrum, visible and invisible; polarization; interference.

(4) Sound.—Production and propagation of sound; wave motion; reflection of sound; velocity of sound; musical sounds; intensity; pitch and quality; resonance.

(5) Electricity.—Measurements and units; sources of electricity; potential; currents and their effects; magnetism; magnetic field; electro-static field; galvanometers; electroscopes; batteries; accumulators; dynamos; motors; electrolysis, ionization; induction, induction coils, transformers, interrupters, their production, their utilization, other effects; X-rays; alpha-rays; beta-rays; gamma-rays; vacuum tubes; cathode rays; thermionic emission; thermo-electricity; radium; radio-activity; Hertzian waves; wireless transmission; electric lighting; telegraph; telephone; microphone; electric heating; electric furnaces.

The synopses of general subjects sufficiently indicate the extent of the knowledge expected of the student.

Some points of difference in the examinations may be noted.

In London dental mechanics and dental metallurgy are examined on in the First Professional, in Edinburgh in the Final. The subject of dental anatomy and physiology forms in London Part III of the First Professional, in Edinburgh it is a Final subject. In London the candidate is not examined in medicine, in Edinburgh he is. The examinations are in all cases partly written, partly oral, and partly practical. The practical examination is a searching test of skill and competence. The final examinations are inspections from time to time by the General Medical Council, and an inspection is now in progress. Full reports on each examination will be presented to the Council by the inspector, Mr. J. Howard Mummery.

Q. 11.—Are any facilities given for post-graduate study and research?

A.—Post-graduate study has been encouraged by the institution of the higher dental diploma. There are, in practically all the medical schools, laboratories in which research work may be carried out under the guidance of professors or superintendents. The Dental Board arranges a series of lectures by distinguished teachers at selected centres. These lectures are open to all registered dentists or medical practitioners. The Dental Board has this year devoted a sum of £3,000 in aid of researches to be carried out by the Medical Research Council into the causes of dental disease. On this Council, which receives a sum of £30,000 per annum from the Government, the dental profession is adequately represented. The Dental Board is also co-operating with the Department of Scientific and Industrial Research in the investigation

Q. 12.—What dental schools are there in your country? What is the average number of dental students entering in each year?

A.—There are dental schools at Birmingham, Bristol, Dublin, Dundee, Edinburgh, Glasgow, Leeds, Liverpool, London (Guy's, London, National, King's College and Royal), Manchester, Newcastle, Sheffield, Royal College of Surgeons in Ireland, Belfast and Cork.

In 1913, the year before the war, 361 dental students were registered. During the war the entries naturally fell off, dropping to 143 in 1917. In 1919 there were 612, in 1920 560 names registered. This large increase was mainly due to the liberality of the Government, which paid fees and maintenance for ex-service students.

The entries are now back at about the pre-war standard, but it is hoped that the policy of the Dental Board in making educational grants to assist deserving students, may result in a considerable increase in the number of entrants.

Q. 13.—Is there any State grant in aid of dental education?

A.—There is no grant specifically ear-marked for dental education, but dental schools connected with a university may derive some benefit from the grants paid to the universities. Schools which obtain recognition as 'central institutions' are eligible for grants from the Board of Education. The Scottish Educational Department does not recognize dental schools as 'central institutions,' and the schools receive no grant.

Here again the Dental Board intends to spend a large proportion of the funds at its disposal in assisting the dental schools to provide adequate buildings and equipment; it must be remembered that these funds are not State funds, but are contributed entirely by the dentists themselves as fees for registration and annual renewal of the same.

Q. 14.—Please state whether in your opinion the curriculum and examinations are satisfactory and sufficient. If you think they should be modified or improved, please state what additions or improvements you would suggest.

A.—Speaking generally, I am of the opinion that the examinations are satisfactorily conducted, and are sufficient to ensure a reasonable degree of efficiency in the successful candidates. If in any case there be a deficiency we may rest assured that it will be noted and reported by Mr. Mummery in the course of his inspection. I think, however, that it is a mistake to hold the examination in Dental Mechanics at an early stage of the curriculum, because a sufficient knowledge and skill in that department of the dental art can be obtained only after the candidate has had ample opportunity of actual work for and in the mouths of patients. Instruction and practice should go on in this subject right to the end of the curriculum, and the examination should form part of the Final. I think there should be an examination—written, practical and oral, in anæsthetics and their administration.

Where medicine is taught it should be examined on; the ordinary student will not study a subject unless he is to be examined in it. These are my personal opinions only, and I do not know whether they are widely shared.

As regards the curriculum, I, having been concerned in framing it, feel myself precluded from offering any remarks either critical or laudatory. I should like, however, to quote Sir George Newman, Chief Medical Officer of the Board and Ministry of Education.

In a very valuable memorandum on Recent Advances in Medical Education he says (p. 151, para. 208), dealing with the revised dental curriculum: "An examination of this curriculum makes clear the principles of a sound dental education. First it is to be founded on science..... The elements of science are relegated to the Secondary School through applied chemistry and physics are included in the four years' course. The fundamental medical subjects, intermediate and clinical, are included, but they are bent to a special purpose, and this purpose is afforded a setting in biology and comparative anatomy and physiology. Secondly, emphasis is laid upon the necessity of furnishing the student with a thorough and comprehensive technique of his art—mechanics, metallurgy and operative work. Dental mechanics are now to be taught in the dental hospital, and if any such instruction be taken in pupilage with a registered dentist the time to be devoted to it must be at least twice that required for the corresponding instruction in a prescribed dental school. Though apprenticeship is retained, two years of such experience may only be counted as one of the necessary four years of professional study. In a word, the practical work required hitherto of a miscellaneous nature, is brought under direct supervision and within the equipment of a recognized dental school and the discipline and inspiration of competent teachers. Lastly, the new curriculum makes dentistry the true handmaid of medicine, a scientific specialism of medicine and not merely a craft. The new knowledge of bacteriology and infection, anæsthesia, antiseptic surgery, venereal disease, the principles of pathology, and the methods of radiology



are all brought fully into application. Dentistry may now become, for the first time, an organized instrument and means of preventive medicine.

There can be little doubt of the result of these reforms. They place the dental profession on a new basis; the Register has been extended and now includes 13,000 names; the unregistered dentist is debarred from practice and incompetent workmanship is reduced: the registered dentist is protected in the exercise of his profession under an authorized Dental Board, and the dental student may obtain a sound and comprehensive education.' "

## SOCIETIES

### **Dominion Dental Council of Canada, Examination Reports**

The following candidates have passed on the subject of Operative Dentistry:

Anthony, A. B.; Armstrong, T. V.; Bisnett, A. M.; Botting D. M.; Boyd, C. T.; Bregman, M. A.; Bristow, R. W.; Campbell, R. H. M.; Carroll, D. D.; Carruthers, W. C.; Chinneck, W. H.; Clay, M. A.; Cline, H. M.; Connell, J. F.; Conrod, J. T.; Coons, K. McK.; Croft, F. H.; Croft, O. L.; Dalglish, R. R.; Davey, H. R.; Dexter, C. R.; Dowler, H. A.; Downer, J. H.; Duncan, H. D.; Dunham, J. E.; Dunlop, H. C.; Falconer, R. L.; Fallaise, H. T.; Ferguson, R. F.; Foote, J. C.; Forbes, R. M.; Fraser, H. R.; Galbraith, R. M.; Godard, W. R.; Gourlie, H. E.; Gray, L. M.; Greacen, G. W.; Greenberg, S.; Greene, C. J.; Hall, O. M.; Harlow, W. E.; Harper, S.; Haughton, W. A. A.; Heal, H. N.; Henderson, E. J.; Hill, V. R.; Hingst, H. W.; Howard, G. B.; Jackman, V. M.; James, L. V.; Jupp, A. F.; Kline, M.; Langille, R. M.; Lesco, S. J.; Lloyd, D. D.; Logan, G. M.; Mabee, J. C.; Madill, C. J.; Magee, A. S. J.; Massey, L. E.; More, W. G.; McInnes, A. C.; MacDonnell, M. J.; MacDougall, G. G.; MacMillan, D. D.; Newlove, R. A.; Osborne, W. C.; Ramage, C. C.; Rattle, W. F.; Robinson, J. A.; Rowland, C. L.; Scharff, R. L.; Shaffner, B. M.; Simms, F. C.; Sinclair, G. A.; Slack, C. S.; Somers, S. M.; Spence, M. E.; Stewart, H. R.; Stinson, E. D.; Stuart, E. B.; Sweet, T. L. P.; Tackaberry, W. J.; Thompson, O. R.; Toole, J. E.; Touzel, T. J. M.; Trainor, J. C.; Urie, B. A.; Whyte, G. W.; Wilkinson, J. S.; Wood, F.

The following have passed their examination on Prosthetic Dentistry and Metallurgy:

Allan, G. W.; Anthony, A. B.; Armstrong, T. V.; Barnett, G. Y.; Boyd, C. T.; Chalmers, J. L.; Chinneck, W. H.; Clay, M. A.; Cline, H. M.; Connell, J. L.; Conrod, J. T.; Coons, K. McK.; Cooper, W. R.; Croft, F. H.; Davey, H. R.; Dexter, C. R.; Doan, F. W.; Duncan, H. D.; Dunlop, H. C.; Fallaise, H.

T.; Ferguson, R. F.; Gourlie, H. E.; Gray, L. M.; Greacen, G. W.; Greene, C. J.; Grose, L. M.; Hall, O. M.; Hargreaves, E. G.; Harlow, W. E.; Harper, S.; Heal, H. N.; Henderson, E. J.; Higgins, A. E.; Howard, G. B.; Jupp, A. F.; Langille, R. M.; Lesco, S. J.; Logan, G. M.; Mabee, J. C.; Magee, A. S. J.; Mallabar, J. W.; Markinski, J. P.; McConkandule, W. M.; MacDonald, M. J.; MacDougall, G. G.; MacMillan, D. D.; O'Connor, T. H.; Ramage, C. C.; Rattle, Wm., F.; Robinson, J. F.; Shaffner, B. M.; Simms, F. C.; Somers, S. M.; Steen, M. R.; Stinson, E. D.; Stuart, E. B.; Sweet, T. L. P.; Thompson, O. R.; Toole, J. E.; Touzel, T. J. M.; Trainor, J. C., Wood, F.

Prosthetic Dentistry (only).

Dowler, H. A.; James, L. V.; Madill, C. J.

Metallurgy (only).

Adams, Lois; Austin, H. S.; Belden, T. N.; Cuttell, F. J.; Greenberg, S.; Hartman, G. J.; Hubbell, L. E.; Kennedy, H. J.; Meek, J. A.; Milburn, W. B.; Olmstead, W. J.

The following have passed on the subject of Anaesthetics:

Allan, G. W.; Anthony, A. H.; Armstrong, T. V.; Bisnett, A. M.; Boyd, C. T.; Bregman, M. A.; Campbell, R. H. M.; Carroll, D. D.; Carruthers, W. C.; Chinneck, W. H.; Clay, M. A.; Cline, H. M.; Connell, J. L.; Coons, K. McK.; Cooper, W. R.; Croft, F. H.; Croft, O. L.; Dalglish, R. R.; Davey, H. R.; Dexter, C. R.; Downer, J. H.; Duncan, H. D.; Fallaise, H. T.; Ferguson, R. F.; Forbes, R. M.; Fraser, H. R.; Gourlie, H. E.; Greenberg, S.; Grose, L. M.; Hall, O. M.; Harlow, W. E.; Harper, S.; Heal, H. N.; Henderson, E. J.; Hingst, H. W.; Howard, G. B.; James, L. V.; Jupp, A. F.; Kay, L. D.; Kline, M.; Langille, R. M.; Lesco, S. J.; Lloyd, D. D.; Logan, G. M.; Mabee, J. C.; Magee, A. S. J.; Massey, L. E.; More, W. G.; Montgomery, W. M.; MacDonnell, M. J.; MacDougall, G. G.; Macmillan, D. D.; Newlove, R. A.; Osborne, W. C.; O'Connor, T. H.; Perkin, J. G.; Ramage, C. C.; Rattle, W. F.; Robinson, J. F.; Rowland, C. L.; Shaffner, B. M.; Simms, F. C.; Simon, M. L.; Sinclair, G. A.; Somers, S. M.; Spence, M. E.; Stinson, E. D.; Stuart, S. B.; Sweet, T. L. P.; Thompson, O. R.; Touzel, T. J. M.; Trainor, J. C.; Wilkinson, J. S.; Wood, F.

The following have passed their examination on Pathology and Bacteriology:

Armstrong, T. V.; Boyd, C. T.; Campbell, R. H. M.; Chinneck, W. H.; Cline, H. M.; Conrod, J. T.; Coons, K. McK.; Croft, F. H.; Davey, H. R.; Doan, F. W.; Duncan, H. D.; Fal-



laise, H. T.; Ferguson, R. F.; Galbraith, R. M.; Godard, W. R.; Gourlie, H. E.; Gray, L. M.; Greenberg, S.; Greene, C. J.; Hall, O. M.; Hargreaves, E. G.; Henderson, E. J.; Higgins, A. E.; Hill, V. R.; Hingst, H. W.; Howard, G. B.; Hubbell, L. E.; Jackman, V. M.; Kline, M.; Lewis, T. H.; Lesco, S. J.; Mabee, J. C.; Madill, C. J.; McInnes, A. C.; MacDonald, D. L.; MacDonald, G. S.; MacDonnell, M. J.; Newlove, R. A.; Nicholson, M. H.; Simms, F. C.; Spence, M. E.; Stamford, R. H.; Steen, M. R.; Strachan, C. L.; Stuart, E. B.; Sweet, T. L. P.; Touzel, T. J. M.; Urie, B. A.; Wright, J. E.

Pathology (only).

Carruthers, W. C.; Dowler, H. A.; Greacen, G. W.; Lloyd, D. D.; Massey, L. E.; Osborne, W. C.; Ramage, C. C.; Rattle, W. F.; Robinson, J. A.; Simon, M. L.; Slack, C. S.; Wilkinson, J. S.

Bacteriology (only).

Allan, G. W.; Barnett, G. Y.; Chalmers, J. L.; Cooper, W. R.; Grose, L. M.; Markinski, J. P.; Meek, J. A.; Perkin, J. G.; Wood, F.; Thompson, O. R.

The following have passed their examination on Orthodontia.

Anthony, A. B.; Armstrong, T. V.; Bisnett, A. M.; Botting, D. M.; Boyd, C. T.; Bregman, M. A.; Bristow, R. W.; Campbell, R. H. M.; Carroll, D. D.; Carruthers, W. C.; Chinneck, W. H.; Clay, M. A.; Cline, H. M.; Connell, J. L.; Conrod, J. T.; Coons, K., McK.; Croft, F. H.; Croft, O. L.; Dalglish, R. R.; Davey, H. R.; Dexter, C. R.; Dowler, H. R.; Downer, J. H.; Duncan, H. D.; Dunham, J. E.; Dunlop, H. C.; Dutton, E. M.; Ferguson, R. F.; Foote, J. C.; Forbes, R. M.; Fraser, H. R.; Galbraith, R. M.; Godard, W. R.; Gourlie, H. E.; Gray, L. M.; Greacen, G. W.; Greenberg, S.; Greene, C. J.; Hall, O. M.; Harlow, W. E.; Harper, S.; Haughton, W. A. A.; Heal, H. N.; Henderson, E. J.; Hill, V. R.; Hingst, H. W.; Jackman, V. M.; James, L. V.; Jupp, A. F.; Kline, M.; Langille, R. M.; Lesco, S. J.; Lloyd, D. D.; Logan, G. M.; Mabee, J. C.; Madill, C. J.; Magee, A. S. J.; Mallabar, J. W.; Massey, L. E.; More, W. G.; McInnes, A. C.; MacDonnell, M. J.; MacDougall, G. G.; MacMillan, D. D.; Newlove, R. A.; Osborne, W. C.; Ramage, C. C.; Rattle, W. F.; Robinson, J. A.; Rowland, C. L.; Scharff, R. L.; Shaffner, B. M.; Simms, F. C.; Simon, M. L.; Sinclair, G. A.; Slack, C. S.; Somers, S. M.; Spence, M. E.; Stewart, H. R.; Stinson, E. D.; Strachan, C. L.; Stuart, E. B.; Sweet, T. L. P.; Tackaberry, W. J.;

Thompson, O. R.; Toole, J. E.; Touzel, T. J. M.; Trainor, J. C.; Urie, B. A.; Whyte, G. W.; Wilkinson, J. S.; Wood, F.; Wright, J. E.

The following have passed their examination on the subject Jurisprudence and Ethics:

Allan, G. W.; Armstrong, T. V.; Barnett, G. Y.; Bisnett, A. M.; Botting, D. M.; Boyd, C. T.; Bregman, M. A.; Campbell, R. H. M.; Carroll, D. D.; Carruthers, W. C.; Chalmers, J. L.; Clay, M. A.; Cline, H. M.; Connell, J. L.; Conrod, J. T.; Coons, K. McK.; Cooper, W. R.; Croft, F. H.; Croft, O. L.; Dalglish, R. R.; Davey, H. R.; Dexter, C. R.; Dowler, H. A.; Downer, J. H.; Duncan, H. D.; Dunham, J. E.; Dunlop, H. C.; Dutton, E. M.; Fallaise, H. T.; Ferguson, R. F.; Foote, J. C.; Forbes, R. M.; Fraser, H. R.; Galbraith, R. M.; Godard, W. R.; Gourlie, H. E.; Gray, L. M.; Greacen, G. W.; Greenberg, S.; Greene, C. J.; Grose, L. M.; Hall, O. M.; Harlow, W. E.; Harper, S.; Haughton, W. A. A.; Heal, H. N.; Henderson, E. J.; Hill, V. R.; Hingst, H. W.; Howard, G. B.; Jackman, V. M.; Jupp, A. F.; Kline, M.; Langille, R. M.; Lloyd, D. D.; Logan, G. M.; Mabee, J. C.; Magee, A. S. J.; Mallabar, J. W.; Markinski, J. P.; Massey, L. E.; More, W. G.; McInnes, A. C.; MacDonnell, M. J.; Macdougall, G. G.; MacMillan, D. D.; Newlove, R. A.; Osborne, W. C.; Perkin, J. G.; Ramage, C., C.; Rattle, W. F.; Robinson, J. A.; Rowland, C. L.; Roop, L. B.; Scharff, R. L.; Shaffner, B. M.; Shepherd, F. H.; Simms, F. C.; Simon, M. L.; Sinclair, G. A.; Slack, C. S.; Somers, S. M.; Spence, M. E.; Steen, M. R.; Stewart, H. R.; Stinson, E. D.; Strachan, C. L.; Stuart, E. B.; Sweet, T. L. P.; Tackaberry, W. J.; Thompson, O. R.; Toole, J. E.; Touzel, T. J. M.; Trainor, J. C.; Urie, B. A.; Whyte, G. W.; Wilkinson, J. S.; Wood, F.; Wright, J. E.

The following have passed their examination on Anatomy:

Armstrong, T. V.; Austin, H. S.; Barnett, G. Y.; Carroll, J.; Carroll, D. D.; Carruthers, W. C.; Conrod, J. T.; Cooper, W. R.; Fisher, E. M.; Flack, R. F.; Glascott, J. G.; Hartman, G. J.; Kennedy, H. J.; Kohli, F. A.; Meek, J. A.; Montgomery, A. R.; McSloy, V.; Olmstead, W. J.; Phillips, K. McK.; Polack, I. G. G.; Singer, A.; Steen, M. R.; Stett, M. L.; Stinson, E. D.; Wood, F.

Physics and Chemistry: Adams, L.; Armstrong, T. V.; Austin, H. S.; Barnett, G. Y.; Belden, T. N.; Calbeck, L. M.; Chalmers, J. L.; Cooper, W. R.; Cowan, F. H.; Cross, S.; Cuttell, F. J.; Dobson, J. W.; Eaton, H. M.; Ferguson, R. F.; Garland, C. F.; Hartman, G. J.; Kennedy, H. J.; Kline, M.;



Lewis, T. H.; Mabee, J. C.; Meek, J. A.; Newlove, R. A.; Olmstead, W. J.; Simms, F. C.; Stark, S. E.; Steen, M. R.; Stewart, R. J.; Stinson, E. D.; Stuart, E. B.; Thompson, O. R.; Touzel, T. J. M.; Trainor, J. C.; Wood, F.

Chemistry (only): Conrod, J. T.; Hubbell, L. E.

The following have passed their examination on Physiology and Histology :

Armstrong, T. V.; Austin, H. S.; Belden, T. N.; Carroll, D. D.; Conrod, J. T.; Cross, S.; Davey, H. R.; Gourlie, H. E.; Hartman, G. J.; Kennedy, H. J.; Mabee, J. C.; Meek, J. A.; Montgomery, A. R.; Newlove, R. A.; Olmstead, W. J.; Simms, F. C.; Steen, M. R.; Stinson, E. D.; Thompson, O. A.; Touzel, T. J. M.; Wood, F.

Physiology (only).

Adams, L.; Cowan, F. H.; Stark, S. E.; Stewart, R. J.; Garland, C. F.; Milburn, W. B.

Histology (only).

Carroll, J.; Carruthers, W. C.; Chalmers, J. L.; Fisher, E. N.; Flack, R. F.; Kohli, F. A.; McCaffrey, J. M.; McSloy, V.; Phillips, K. McK.; Polack, I. G. G.; Singer, A.; Stett, M. L.

The following have passed their examination on Materia Medica and Therapeutics :

Armstrong, T. V.; Barnett, G. Y.; Belden, T. N.; Bisnett, A. M.; Carruthers, W. C.; Chinneck, W. H.; Cline, H. M.; Connell, J. L.; Coons, K. McK.; Cooper, W. R.; Davey, H. R.; Downer, J. H.; Duncan, H. D.; Ferguson, R. F.; Gourlie, H. E.; Greene, C. J.; Hall, O. M.; James, L. V.; Kline, M.; Lewis, T. L.; Mabee, J. C.; Madill, C. J.; Meek, J. A.; McConkendule, W. M.; McInnes, A. C.; MacDonald, D. L.; MacDonald, G. S.; MacDonell, M. J.; Newlove, R. A.; Nicholson, M. H.; Olmstead, W. J.; Rattle, W. F.; Robinson, J. A.; Simms, F. C.; Somers, S. M.; Stamford, R. H.; Steen, M. R.; Stuart, E. B.; Touzel, T. J. M.

Materia Medica (only).

Austin, H. S.; Cowan, F. H.; Garland, C. F.; Hartman, G. J.; Kennedy, H. J.; Milburn, W. B.; Stark, S. E.; Stewart, R. J.

Therapeutics (only).

Campbell, R. H. N.; MacMillan, D. D.; Thompson, O. R.

## Saskatchewan Dental Convention

Dr. E. Roy Bier, Winnipeg, Man., gave a very interesting and instructive paper on nitrous oxide and oxygen and sonnoform oraesthesia, with practical demonstration.

Also a clinic on the extraction of impacted third molars using gas oraesthesia.

Dr. Kennedy, Banff, Alberta, read a paper and demonstrated with model abutments used on fixed bridge work.

We had a very enthusiastic meeting this year. Attendance about 50 members.

Officers: Dr. E. C. Campbell, pres., Saskatoon; Dr. Wilson, pres., North Battleford; D. J. Ferguson, sec.-treas., Saskatoon.

Officers of B. C. Dental Association: President, J. Bricker, Vancouver; Vice-Presidents, J. R. Pedan, Vancouver, W. P. Slead, Nelson; Secretary, Fraser Allen, Vancouver; Treasurer, R. Shortreed, Vancouver; Auditors, R. Coldwell and M. Guy.





# Editorial

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TORONTO, SEPTEMBER, 1924

No. 9

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## Study Clubs

The time is now at hand when the various study clubs are preparing for their winter's work. Changes in methods of practice come so rapidly in dentistry that no member can afford to rest from study even for one winter. The work of organization in such academies and clubs would be much lightened if members would promptly attach themselves to whatever section they wish to attend.

The Academy of Dentistry, Toronto, has prepared a splendid program for this winter. The organization and its methods should especially appeal to the recent graduate. Dr. Arthur Day, its president, is active and progressive, and under his leadership, those taking part may expect to derive great benefit.

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## Dental Advertising

The calling of Dr. E. C. Boyle before the disciplined committee to show causes why his license should not be cancelled for disgraceful conduct in a professional sense, has called forth a number of editorials in the press of Canada. It is difficult for the layman and in some cases for the professional man to understand why a dentist should not present his skill

to the public in an attractive form. There is nothing morally wrong or criminal in telling the public about one's training in his calling, but refined people do not praise themselves. The real harm comes when advertisers tell what is not wholly true or even half true, and the public is not sufficiently informed on the subject to know the truth of the matter.

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## Notes

The Canadian Society of Anaesthetists gathered at Ottawa June 20, 1924.

Dr. M. L. Rhun delivered a radio address in Montreal on "How Death Lurks in the Teeth."

Dr. A. W. Thornton addressed the Lion's Club in Vancouver during the Canadian Dental meeting.

Tablets can be secured from the departments of health which when dissolved in suspected water will make it safe to drink.

It is said that 25% of all tuberculosis occurring in children under sixteen years of age is contracted from milk supplied by tuberculosis cows.

Number 1 of the faculty letter, issued by the Faculty of the Royal College of Dental Surgeons, has been issued. It contains a good deal of useful information.





# Dominion Dental Journal

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TORONTO, OCTOBER, 1924

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## Happy Results of Alveolotomy

*S. G. McCaughey, D.D.S., Ottawa.*

The photographs herewith are of a case which perhaps may be of interest to the profession. The rather remarkable results obtained from so simple an alveolotomy are its only claim for publicity.

A comparison of the various photographs shows better than written description could, the improvement physically. The change in the patient's mental outlook is quite evident too, in a comparison of the photographs "before and after," and also in the photograph of the two full face masks.

This young lady of twenty-five was in a most unhappy condition; painfully self-conscious, she appeared in public only because necessity forced her to work, refusing practically all participation in social affairs. She is now radiant with the joy of living and a self confidence has developed in such a short time that it is almost astounding.

The alveolotomy was done under the ordinary technique, and was comparatively simple.

This is another unfortunate result of the loss of the first permanent molars which were extracted when the patient was a child in England. The deformity has become progressively worse, as may be seen by a comparison of the photo, (3) taken eight years ago, the enlargement taken from a family group, (2) five years ago, and the profile photo, (4) of the mask; the patient refusing to have a photograph taken for the last five years.

In the photograph of the full face masks, (6) a comparison will show the change from the strained worried expression; the drawn cheeks; the snub nose, with the depression



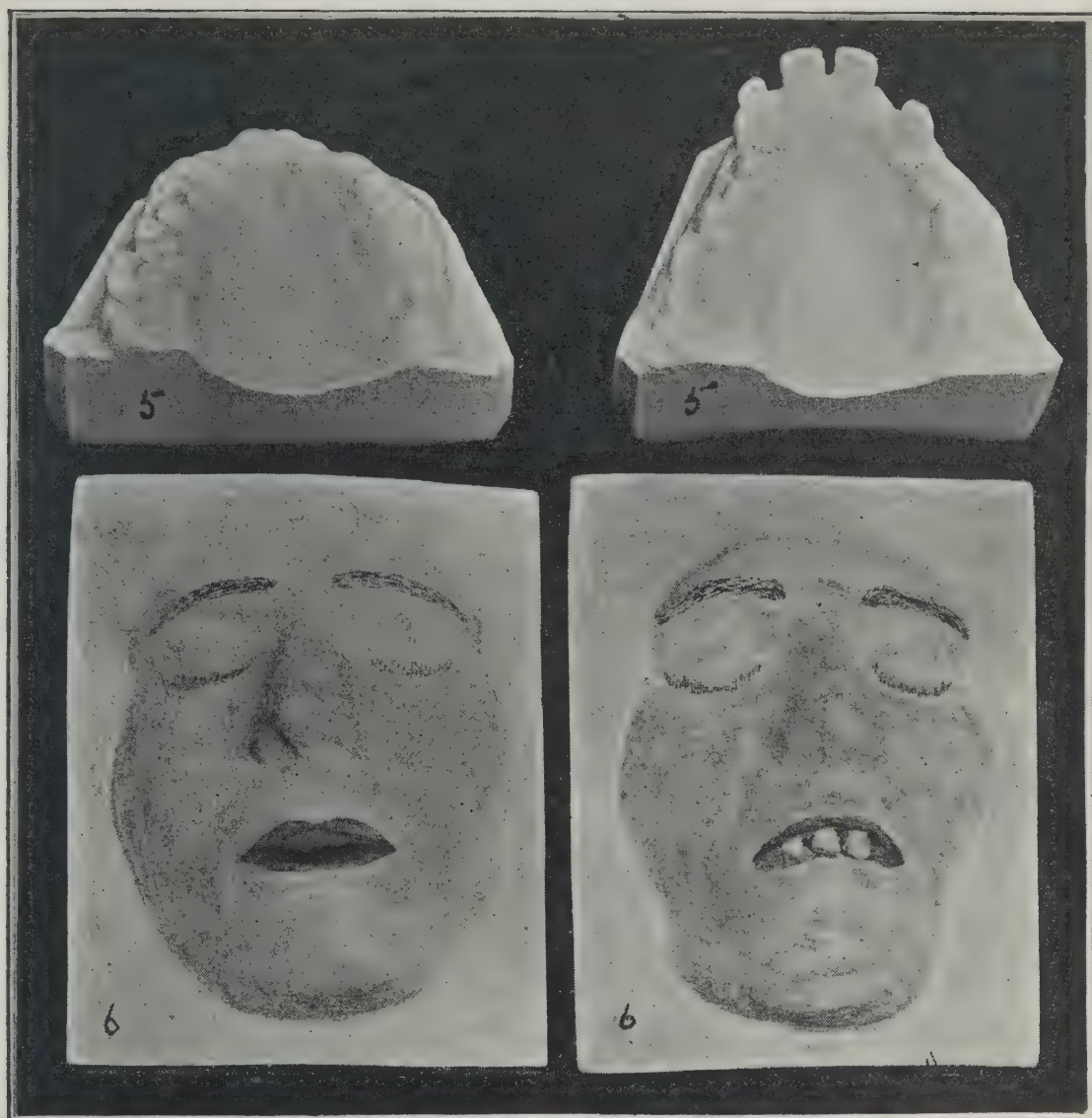
below the bridge of the nose; to the well shaped nose, the peaceful expression and pleasing contour of the face.

One phase of the difference in mental attitude is shown in the change from the carelessness as to personal appearance, in the one photograph (2) to the neatness in the other (1).

While one seldom encounters a case which would give such gratifying results, yet there are many unfortunates whose somewhat similar conditions can be greatly improved through our efforts.

Figure 5 illustrates the character of operation and the results on the alveolus.





## A Review of the Present Status of Dental Practice

*Thomas Cowling, B.A., D.D.S., Royal College of Dental Surgeons, Toronto.*

Any report on dental practice must, of necessity, be characterized by confidence and optimism—confidence in the ability of dentists to solve present difficulties and optimism as regards the future of the profession.

Such a view is but natural because we are justly proud of the fact that no profession or calling has surpassed the record of progress made by dentistry. We recall that only a few years ago we were clamoring for recognition; to-day more attention is being given to dentistry than to any other branch of the healing art. Quite truthfully it may be said that the past few years have been years of great achievement and noted also for the hopefulness of outlook.

It is the veriest commonplace to say that any science, to be truly effective, must be progressive; indeed, it is a biological law that each generation must surpass the achievements of its predecessors. Progress, in a physical sense, is dependent upon resistance. The ship's propeller must have the resistance of the water; in walking progress is dependent upon the resistance of the ground. The substantial progress made by Dentistry has been due, in part at least, to the fact that it has had to contend with much opposition. For many years it was the object of criticism, much of which was unfair and undeserved. We were inclined to regret the tardiness of medicine in recognizing dentistry as an efficient ally, but this has really been beneficial in that it has urged us on to greater things. Dentistry has ever been characterized by a ready response to criticism, also by the ability to surmount obstacles and to satisfy each new demand. Instance the quick response to the focal infection challenge, as a result of which dentistry was recast overnight and made ready to cope with new requirements.

It is true that many new theories have been advanced and new methods of practice introduced, many of which have been discredited and abandoned because they were unscientific and impracticable. But in this respect dentistry is no more culpable than other sciences, for the introduction of fads and fancies has been the common heritage of all the liberal arts and sciences from time immemorial.

Records show clearly how our profession has progressed. Dentistry was at first considered a part of Medicine; then it drifted away and became more or less an art of Mechanics, special emphasis being placed upon the restoration of impaired and missing teeth. At this time prosthesis developed as an independent branch of dentistry. Emphasis was also placed upon the restoration of teeth with gold, silver and cements.

Pride in the architecture of the restoration was the characteristic feature of the dentistry of this period, and little knowledge of physiology, anatomy or histology was deemed necessary. In brief, it was the period of the craftsman or artisan dentist.

For a time Dentistry "pursued the even tenor of its course" undisturbed by any serious problems until Dr. Hunter, an English physician, rudely awakened us from our peaceful slumbers. He put the entire profession on its mettle



by boldly asserting that many systemic ailments were directly chargeable to oral sepsis. It was a veritable impeachment of prevailing dental methods. For a time Dr. Hunter remained the lone accuser but eventually the truth of his accusations became evident so that to-day every branch of dental, medical and the allied sciences have turned their attention to the correction of this grave condition. In a sense, then, we may say that dentistry and medicine have once more joined forces to fight a common foe. As a result, a new era has opened up for dentistry and more attention is now being given to the study of pathology, bacteriology and histology than at any previous period. Research with a view to explaining how and why focal infection has a direct bearing upon local and general disease, has been instituted wherever dentistry is studied.

For a time restorative work has had to occupy a position of secondary importance. The purely mechanical in dentistry has been superseded by the patho-histological study of the structure of the teeth and surrounding tissues as these are related to focal infection. Necessarily this involves the consideration of efficient methods of root-canal filling, crown and bridge work and artificial denture retention. The teeth are no longer treated as inert fragments of the body, but as living organisms closely related to body health.

Occasionally we hear it said that dentistry is no longer mechanical. It might be restated with greater truth that the purely mechanical in dentistry has taken on a new importance in that it is linked up with the biological. Mechanical dentistry is not being neglected; indeed restorations now show more care as regards detail, and are more efficient than they have ever been. There is marked evidence of greater concern as to the effect of restorations upon the oral tissues and it is not falsifying the true condition to say that mechanical dentistry during the past few years has made real progress.

Perhaps the most conspicuous innovation in dentistry is the amount of time being devoted to the intensive study of the fundamental subjects. Our educational plan has been entirely recast. It now aims at inductive thinking, which is the basis of true research. Surely no profession can boast of a better foundation. Consequently of dentistry it may be said that it is entering upon an era of conservative methods based upon sound scientific principles. Diagnosis looms up as a department of first importance wherein scientific research is buttressed with clinical experience. Here theory and prac-

tice, cause and effect go hand in hand. Preventive dentistry though the newest addition to our curriculum of studies has already shown sturdy growth and gives promise of even greater development in the near future. There is also a feeling growing among dentists that the radical treatment of dental ailments by means of extraction is not the proper course and that our chief aim must ever be the conservation of the teeth.

Our profession is a complex one, combining, as it does, mechanical skill, artistic sense, and a knowledge of chemistry, physics, engineering, surgery and medicine. As a result there has been the inevitable division into specialties such as, diagnosis, therapeutics, restoration and prevention. Obviously it is impossible in a report of reasonable length to deal with all these departments so a few only, will be referred to here.

#### DIAGNOSIS

One of the outstanding weaknesses of dentistry is the lack of appreciation of the importance of diagnosis. The x-ray has been, or ought to have been, a great source of strength but in many instances its use has been sadly abused. As evidence of its importance, the x-ray is recognized by our judicial courts as comprising part of the average dental office equipment. In dentistry the advantages of radiography have not been fully utilized. We have become accustomed to use it solely to get ourselves out of trouble, rather than for the purpose of keeping out of trouble.

We have learned that in the hands of the inexperienced diagnostician the x-ray may prove dangerous and in the hands of an unscrupulous person it may be made to serve purely mercenary ends. We have also found that erroneous interpretations often result in a grave injustice to the patient.

The question of the qualification of the interpreter is an important one, because many x-ray laboratories are conducted by those who have received no training whatsoever in histology, pathology or anatomy. These men not only take the pictures, but also make the interpretation. In support of this arrangement it is often argued that the average dentist does not do enough of this work to become expert, hence the need of the laboratories.

It is a very questionable policy to condemn all teeth when the skiagrams show a thickening of the periapical tissue, because it is possible that when this tissue becomes affected,



there is an infiltration of leukocytes and lymphocytes with the result that there is an increase in the size of the periodontal membrane about the apical portion of the tooth. This is, in effect, Nature's protective measure, the same as occurs about any infected tissue. There may not necessarily be any destruction of tissue and most likely there will be, after a time, a return to normal conditions. Evidence is accumulating that teeth which show but a small area near the apex and where there is no indication of absorption of the apical cementum, can be saved. The prognosis is especially favorable in patients of good resistance and where the infected area is comparatively new.

With the many improvements made in x-ray therapy there looms up the possibility of using these rays or similar ones in the treatment of oral conditions more extensively than they now are used.

Now that so many institutions are making x-ray examinations of the teeth, there is an urgent need for some sort of standard mounts for dental radiograms. Standardization would greatly facilitate the filing problem.

#### PULPLESS TEETH

That there is a definite relationship between tooth infection and general health is readily conceded. To explain the exact connection of these two is one of most important problems in dentistry and medicine.

In our enthusiasm to correct certain systemic ailments dental and medical practitioners alike are prone, sometimes, to emphasize the dental sources of infection to the exclusion of all others. This may be enthusiasm but certainly is not good reasoning. We have learned that the enthusiast who is without capacity, is really a dangerous person. With a fair degree of accuracy, it might be stated that there is a change in opinion observable within the last few months with regard to the status of the pulpless tooth. There is less readiness to extract these teeth and a more pronounced tendency in the direction of conservation. Many are now of the opinion that most pulpless teeth can be saved and made serviceable without endangering body health.

In the body there are many sites where chronic infections may have their source so that it is not reasonable that the teeth should always be looked upon as the sole offenders. Primary foci may be found in infected tonsils, in the air sinuses of the face, in the walls of the pharynx and respiratory

tract, in the gall-bladder and genito-urinary tract. Increasing evidence is accumulating regarding the close relationship between gastro-intestinal stasis and oral health. Some even go so far as to state that the mouth is a good index of the intestinal condition.

It is clear therefore, that the teeth should not be regarded as the source of all primary foci of infection and that they should not be charged with all the hidden and untraceable disturbances of the body. Still the teeth as a factor in general health cannot be overlooked. There is no doubt but that a blind abscess or the granuloma on a tooth—the result of progressive diseases in the periapical tissues—are ideal breeding places for bacteria and should be treated accordingly.

For years we have been trying, each in our own way, to explain why focal infection is linked up with local and general diseases, but our efforts have not always been what we would desire. That diseased teeth do not in every case cause systemic troubles is due to the fact that the infection about a tooth may remain localized; but there is ever present the possibility that at some time the infection may spread through absorption, due to its virulence and quantity. With the lowering of the patient's resistance the danger is increased.

The importance of the problem of the pulpless tooth is apparent to us all. It is admittedly the most vital question before dentists to-day, and until such time as a satisfactory solution is obtained and a technique of root-canal treatment evolved which will eliminate all danger of immediate or subsequent infection, our position in the estimation of the medical profession will not be favorable.

#### ROOT-CANAL TREATMENTS

Many very excellent methods of root-canal filling have been described by outstanding members of the profession and no doubt each and every exponent of a particular technique is able to secure satisfactory results in his own way. Others try and fail. Personal skill seems to be the predominating characteristic of many of the methods introduced—each gets results by following his own technique; others, however, are unable to imitate the method. In essence, therefore, we have, as the sum total of dental endeavors, a series of individual procedures that do not lend themselves to standardization. The great need in dentistry is the establishing of simple yet efficient methods of root-canal treatments that can be made generally acceptable. If this be done, then public health will bene-



fit and dentistry take on a new importance in the eyes of our medical confreres.

The chief difficulty in root-canal work centers about the physical possibility of removing all the debris from a capillary tube or root which possesses multiple foramina, and completely sealing the same. Many authorities are of the opinion that with our present methods this is an impossibility. All are agreed, however, that the prognosis in root-canal work is more favorable in single than in multi-rooted teeth, due to the ease of access to the canals.

In all candor we must confess that, though this problem of root treatment is of paramount importance, much of the research work pertaining thereto has been done by commercial concerns and not by the dental profession. Whilst it is true that such work is better done by interests outside the profession than not done at all, still it would be better if undertaken by those not particularly interested in marketing a product.

From the mass of information available on the subject one is forced to the conclusion that there exists in the minds of dentists, a general dissatisfaction with most of the prevailing methods of root-canal work and that they are willing to go on along old lines until something of real worth is forthcoming. A simple, efficient, and standardized technique is very much needed.

The impossibility of filling fine root-canals with gutta percha solutions alone, due to the contraction following the evaporation of the solvents usually used, has long been recognized. One of the newer methods in vogue depends upon the diffusion and precipitation of filling materials, in canals that have been previously rendered sterile.

According to this method, substances such as resin and gutta percha in solution, are diffused throughout the fine canals and the solvent is then removed by suitable reagents. As a result the deposited solid material clings to the walls of the canals. In this way it is hoped to obliterate all space within the tooth excepting the tubuli.

There have also been evolved certain methods of treatment whereby, it is hoped, through a process of stimulation of the tissues, a deposit of secondary cementum may be formed that will close up the apical foramina. These methods have not, as yet, been sufficiently investigated to warrant their general use in dentistry.

One note of unanimity is to be found in all the discussions on root-canal work, namely: that the Howe method of staining is suitable for use as a supplementary treatment. This method is the precipitation of an ammoniacal solution of silver nitrate with formaldehyde or other suitable reagent.

Apparently the consensus of opinion regarding root-canal treatment is that the best results are obtained where there is an absence of any constitutional disturbance and where the patient's resistance is high: also that it is a grave injustice to treat infected root-canals for patients suffering with pronounced systemic infections, especially in those cases where all other likely foci of infection have been eliminated and no improvement has been noted in the patient's condition. Therefore, until such time as our methods of root-canal filling shall have improved, it is best to remove such teeth.

#### CAVITY PREPARATION.

With the knowledge of the seriousness of focal infection there has come certain modifications in cavity preparations. The supreme aim is to conserve the vitality of the pulp, hence the introduction of the pin-ledge fillings, three-quarter crowns, and other restorations of a similar type which give security of anchorage with the added advantage of pulp protection. From the esthetic standpoint they are also desirable.

Excellent clinics exemplifying the modern view of cavity preparation have been arranged for this Convention and the best methods will be skillfully demonstrated by expert clinicians.

#### STERILIZATION.

The sterilization of dental instruments is being well done but there is still room for improvement. The sterilization of hand pieces is seldom, if ever, attempted by some operators, although these hand-pieces frequently become saturated with the patient's saliva. No doubt the neglect is due to the intricate construction of these pieces, but this is not a sufficient excuse. Regular swabbing of the parts with alcohol will ensure cleanliness and prove harmless to the mechanism. Impression materials should receive the same care as regards sterilization, as do the dental instruments, but it is a fact that this is seldom the case.

#### DENTAL CARIES.

During the past year a notable contribution to the literature dealing with the bactericidal origin of dental caries was



made by Doctors James McIntosh, W. Warwick, James and P. Lazarus-Barlow of England. Their investigations show: (1) the constant presence of a definite type of bacillus in caries; (2) that this bacillus is capable of forming a high degree of acidity by the fermentation of carbohydrates; (3) that teeth left in contact with cultures over a prolonged period show changes almost identical with "natural caries," namely: Erosion of enamel and penetration of the dentinal tubuli with the formation of liquefaction foci; (4) that this bacillus resembles the acidophilus group of Moro but biologically there are several points of difference; (5) that the successful production of artificial caries by pure cultures of the organisms isolated, goes far in establishing the microbial theory of caries.

The result of this research comprises a valuable addition to our knowledge of the etiology of dental caries. From the biological standpoint it marks a distinct advance because, heretofore, we have had to infer the bacterial source of caries; now the causative factors have been isolated and the specific organisms named. We also know something of the conditions under which the bacteria work. These findings prove the correctness of Doctor Miller's theory, and if the research work now being carried on meets with the same degree of success as has attended the earlier efforts, dentistry will soon be within a measurable distance of a method of treatment calculated to prevent caries.

Another theory as to the causative factors involved in caries, claims that endocrine derangement causes bones to either harden or soften. This theory emphasizes the importance of calcium in maintaining healthy tooth conditions. It is pointed out that enamel in health, progressively hardens as life proceeds, due to the laying down of calcium from the body store held by the endocrine apparatus which is also the "fixer" of the lime salts in the teeth. When the endocrine apparatus is thrown out of balance by calcium starvation, the reserve calcium is used up and the fixation of lime salts in the teeth is interfered with. Calcium starvation leads to deficiency of calcium in the saliva causing a gradual diminution of alkalinity, hence susceptibility to caries.

Whether this theory can be generally supported is doubtful, but it holds interesting possibilities in that it relates the problem of caries to nutrition.

Until other and better solutions are forthcoming, the old theory of Doctor Miller is a good one to depend upon. In ef-

fect this theory is: Dental caries primarily results from the attacks made upon tooth structure by acids formed by bacteria derived principally from carbohydrate foods. Where the carbohydrate food material clings to the tooth, there caries is found. Adhesive and sticky foods tend to facilitate acid production, especially in deep crevices where the acid may remain unneutralized for a long time because these areas are not likely to be irrigated with saliva.

Clinically, there is much evidence to support the theory of Dr. Miller, for if there is a diminution in the amount of carbohydrate food there is practically always a noticeable reduction in the number of cavities in the teeth. We are also all aware of the fact that the increase in the forces causing tooth decay synchronizes with the introduction of refined starchy foods and the increase in the concentration of sugary foods.

#### THE SIXTH YEAR MOLAR.

The importance of the sixth year molar is not sufficiently emphasized. It is rightly considered to be the most important tooth in the dental arch because its early removal causes a disturbance of the complete masticatory apparatus.

Some authorities claim that the enamel of the newly erupted tooth is imperfect and therefore less resistant to attacks of acids than it is at a later period. If this is true, then the need for greater care of the sixth year molar at once becomes apparent.

The devitalization of this tooth is little less than a calamity for many who have studied this question claim that if a child under fourteen years of age has the pulp removed from the first permanent molar, that tooth will not last until the thirtieth year.

In the filling of the newly erupted molars, it is well to avoid the use of synthetic porcelain because of the tendency to devitalization. Lining the cavity before inserting the synthetic porcelain helps to protect the pulps, but in case of the six year molars, other filling materials are preferable.

#### PORCELAIN.

There has been a marked increase in baked porcelain restorations, and more beautiful work is now being done than at any previous period. This is due in part, to the supply of easily controlled porcelain bodies and also to the introduction of improved and convenient furnaces.



## GOLD FOIL FILLINGS.

Whilst it must be said that cast gold inlays have made a favorable impression and have become part of every dentist's armamentarium, still there is a noticeable return by many of our best operators, to gold foil fillings. A good foil restoration shows competence and is a lasting tribute to the operator's skill. These fillings are also a great help in developing manipulative skill, hence it would be a serious mistake to minimize their value when instructing dental students.

## APICOECTOMY.

As a means of saving anterior teeth, apicoectomy has proven its worth. Recognition should be given the fact, however, that this operation is successful only as the culmination of a perfect root-canal filling because of the need for absolute sterilization.

## THE DENTAL MECHANIC.

The position of the dental mechanic is a rather paradoxical one. He makes most of the intricate and complicated prosthetic resortations, yet receives no instruction from our dental teachers. A dentist, on the contrary, receives four or five years of detailed instruction from expert teachers yet seldom follows a case farther than the impression and bite stage.

We do not like to admit it, but it is a fact nevertheless, that the majority of dentists never make a denture, bridge, crown or inlay. The mechanic does the work. In defence of our present system it may be contended that the training received by the dentist qualifies him to superintend the work done by the assistants, and there is perhaps, much truth in such a statement. Unfortunately this supervision, in most cases, is more theoretical than real.

The time is now opportune for a careful survey of this problem of instruction of dental mechanics. The present state of affairs is illogical and indefensible.

## THE DENTAL NURSE

Some kind person has defined the dental nurse as one with the qualification of a housekeeper and the training of a specialist. This may be an extravagant valuation of their services, yet it is quite evident that the training of dental nurses must be made more thorough than it now is.

In some quarters it is even whispered that the training unfits them for the ordinary duties required by the general practitioner; rather, that it produces assistants for specialists

only. To be truly effective the training given these nurses should fit them for duties other than that of adding adornment to offices which in many instances are already overly adorned.

All are agreed that the dental nurse should not attempt operations at the chair. Her real duty is to act as an assistant to the operator and she should never attempt to usurp his duties. Some dentists allow the nurse to do prophylactic operations, holding that this is permissible, provided such treatment does not extend beyond the gingival line. This is but the insertion of the thin edge of the wedge and should be discouraged.

#### ADVERTISING DENTISTS.

The number of dentists who advertise in our daily papers, through the distribution of pamphlets, in moving picture theatres, on pillar-boxes, and on concert programmes, is steadily increasing. These men place the entire profession at a disadvantage and in a very unfair position, hence their activities should be stopped. In view of the fact that medical and legal practitioners are subject to rigid discipline by their confreres, it seems but reasonable to expect the same sort of censorship over the members of our own profession. If necessary, suitable amendments to the statutes governing Dentistry should be secured in order to give mandatory powers to our executives.

#### EXODONTIA.

The recent enthusiasm for extraction of teeth was, in effect, a confession of our incompetence. Dentistry should ever have for its true objective the saving of teeth rather than the removal of them, except in cases where they are a menace to health.

It would be difficult to estimate the ill results that will follow the wholesale extraction so popular during the past few years. Had this continued it would have had a disastrous effect upon the human race, for we know that there is no satisfactory substitute for the natural teeth. The trouble has been that too small a value has been placed upon them. A surgeon never undertakes an operation involving the removal of an important part of the human organism without first calculating the after effect upon the patient. In dentistry we are too apt to remove the teeth first and then attempt a substitution. Many times the results are conspicuous by their failure.



It should be recognized that successful exodontia depends upon sound surgical principles, and a thorough knowledge of pathology. No tooth should be extracted just because it is suspected and too many infected teeth should not be removed at one time because of the danger to the system.

Many teeth are extracted on the advice of the physician to alleviate systemic disturbances. The dentist should not act upon the suggestion of others until he has examined the teeth thoroughly and definitely decided their worth. This surely is a commendable attitude.

With the introduction of new root-canal treatments resulting in a greater possibility of saving pulpless teeth, the forceps should not be taken in hand too speedily. When these new methods have had a fair trial and when this question has been given the attention that its seriousness warrants, then the forceps should be resorted to, provided it shall have been proven that root-canals cannot be successfully treated. Until such time, however, conservation is the watch word.

Admittedly there are many cases where extraction is the best possible treatment because of the danger of dental focal infection. We have learned that it is best to sacrifice the doubtful pulpless teeth of patients suffering from metastatic diseases and where the x-ray and clinical evidences are unfavorable. It is the dentist's duty to examine and report to the physician, all infectious conditions of the teeth of patients suffering from any metastatic disorder.

#### PREGNANCY.

There has been an old and misleading dictum, the heritage of years, that we should avoid extracting teeth for pregnant women. Experience goes to show, however, that for even these cases it is best to extract teeth that are infected and beyond repair. The ideal anaesthetic in such cases is nitrous oxide and apparently the duration of the anaesthesia has little or no effect upon the patient.

#### IMPACTED TEETH.

Impacted and unerupted teeth, due to their susceptibility to infection, are best removed. Skiagrams taken at different angles are of inestimable value in such cases because they aid in determining the position of the teeth in relation to the surrounding tissues.

## ALVEOLECTOMY.

Alveolectomy is rarely indicated and only when the sub-apical bone is largely infiltrated or destroyed. The needless removal of alveolar bone is a very serious thing because of the difficulty encountered when making artificial replacements. Indeed, many prosthodontists are complaining about this. Needless to say, the extent of alveolar destruction should first be accurately determined by radiographic indications.

## CURETTEMENT.

Much of the prolonged, intense pain following the extraction of teeth is due to extensive curettage which is often uncalled for and unnecessary. It would seem reasonable to infer, as a general rule, that if a tissue is healthy enough to be infiltrated with an anaesthetic, there should be no need for curetting.

Some dentists remove not only the granulation tissue, but also the bony wall and curette the cancellous tissue of the bone beyond it. The purpose, of course, is to remove all infection even beyond the actual area of rarefaction. There is, however, usually no need for breaking down the bony wall which Nature has placed around the apical area.

Infected sockets, we know, should be curetted thoroughly, but much curetting is done in a haphazard fashion and amounts simply to a scraping of the walls of the socket. At all times great care is necessary, especially in the antrum region, because of the danger of forcing infectious material in the antrum.

The flooding of teeth sockets with irritating antiseptics is not good practice. Swabbing with iodine gives satisfactory results but generally clean blood is about the best wash for the injured tissues.

## ORAL SURGERY.

As a result of the lessons learned during the war, many dentists are now devoting their entire attention to oral surgery and their efforts are meeting with well-deserved success. Skillful preparation of the mouth for artificial dentures is of great importance and is very much appreciated by the prosthodontist.

## BLOCK ANAESTHESIA.

To the improvements in the methods of block anaesthesia must be credited much of the success of oral surgery. Now difficult and prolonged operations are being performed under



local anaesthesia. Success with this method depends upon an intimate knowledge of anatomy as well as of systemic reactions.

One disadvantage of block anaesthesia is that occasionally the operator breaks a needle deep in the tissues. The recovery of the broken portion requires great skill and is accomplished in some cases only after extensive resection of the tissues. The comparative frequency of such accidents indicates an urgent need for stronger and heavier needles. We have learned that straight needles are less hazardous than are the curved type.

By way of overcoming the danger of broken needles, it has been suggested that a piece of fine wire be attached along the entire length of the needle. Then if it should break, the broken piece can be easily traced and removed. No doubt as the urgency of our wants becomes recognized, more satisfactory needles will be forthcoming.

#### ORTHODONTIA.

Deformities, especially in the young, always elicit sympathy. A distorted limb is almost an unusual thing in these days of surgical clinics. Irregular teeth are, in a sense, a deformity and often mar one's natural attractiveness. Indeed we know that in many instances irregular teeth may also lead to grave systemic disturbances. These things we recognize as true yet few of us are interested in a practical sense; that is, we do not go to so far as to offer our services for the purpose of effecting the amelioration of these ills.

Orthodontia has long been known as an exclusive art, the benefits of which can only be received by persons of means, and it has become an established practice for dentists to refer to orthodontists only those patients who are endowed with ample funds. This is unfortunate because the real duty of dentistry is to provide treatment for all and not for a few only.

A very successful attempt is being made in many parts of the United States to popularize orthodontia. Some colleges have established one-year courses in this subject; others have included it in post-graduate work, and the results so far have been very gratifying. One cannot help expressing the hope that Canadian dental colleges will find it possible to emulate this praiseworthy example.

We are on the threshold of a new era in orthodontia. Preventive orthodontia looms up as real factor in dentistry, and

the fact is becoming more and more apparent that preventive orthodontic measures are of great importance. The study of nutrition as related to dentition is being stressed, and orthodontists are insisting upon strict adherence to a balanced diet, as an aid to the mechanical treatment of the teeth. The fact that the alveolar tissue development is especially susceptible to nutritional disturbances, has, heretofore, not been sufficiently emphasized in our teaching.

In many cases, prophylactic measures extend to the expectant mother, for it has long been recognized that some of the most difficult conditions with which orthodontists are confronted are pre-natal in character.

Orthodontic treatments show the best results if begun at an early age, say eight years; but even before this age some scheme of muscle development will prove of inestimable value. In brief, this is a method for stimulating the muscles of mastication and may be brought about without the use of any appliance whatsoever.

It results in a gradual expansion of the lower arch due to the vigorous and systematic exercise of the masseter-temporal muscles when the teeth are held firmly in occlusion. Facial development results also through the stimulation of the various groups of facial muscles. A great difference is observable in the appearance of cases treated solely by mechanical interference and those that have had the additional benefit of muscle development.

The idea of muscle development is, to say the least, a reasonable one and is easily carried out. Such treatment could be instituted as part of school dentistry.

Orthodontists select the maxillary deciduous cuspid as being, in most cases, the dominant factor in producing correct occlusion in the anterior teeth. The general practitioner, therefore, should give heed to this and endeavor to retain this tooth in a healthy condition until such times as its true function shall have been performed.

The eighth year has already been suggested as the proper time to begin orthodontic treatment proper. At this age there is rarely any abnormality present; there is simply a lack of development of the arch. This may readily be overcome. At an early age it is not so much a problem of correcting irregularities of the teeth as it is of remedying the under-development of the jaws and arches. If the treatment is delayed, say, to the twelfth or fourteenth year, there is an abnormality



to correct in addition to the irregularity of the teeth and the difficulties present are hard to overcome because the muscles and tissues are more or less fixed.

### CROWN AND BRIDGE WORK

The old question of the relative merits of fixed and removable types of bridge work occupies a conspicuous place in dental literature, but, in all candor, we must admit that only a few really new ideas have been evolved. The chief characteristic of this literature is the amount of attention given to the application of the fundamental principles of mechanics, physiology, pathology, hygiene and other co-related subjects. So the outlook is not by any means discouraging.

The exponents of each type of restoration are legion, consequently the published articles on bridge work are numerous and varied. But from the great mass of information it is difficult to extract anything very definite and conclusive. A somewhat chaotic condition obtains because no attempt has been made in the direction of the standardization of methods. Perhaps it is but fair summing up of the controversy to say that the fixed type of bridge is growing in favor.

A successfully constructed bridge is one that depends not solely upon the beauty of appearance, but upon something more fundamental, i.e.: obtaining dental asepsis and guarding against focal infection. No matter how skilfully constructed bridges, whether removable or fixed, act merely as a crutch. There is a dependence upon other teeth for retention.

The chief reason for using the removable type of bridge work was to do away with the strain on the abutments and to supply a restoration that could be easily cleansed. To obtain both of these desiderata in any one type of removable appliance is a delusion. It is practically impossible to construct any removable bridge so that all the strain of mastication is taken up by the saddle portion and so eliminate all strain on the abutments. It is true that some very efficient attachments have been invented involving a species of double joint socket, which relieves the abutment teeth of direct strain and also aid in the retention of the case, but unfortunately most of these devices are patented and not easily obtained being supplied for the exclusive use of a few mechanical offices.

Practically all known types of removable bridge work place an unnatural load or strain on the teeth that are used either as direct or indirect retainers. The clasp-bridge, so

called, is in reality a partial denture and these partial dentures are replacing removable bridge work to a large extent.

The saddle of the removable bridge does not play as important a part in the support of the bridge as was at first thought, and it does not relieve the bridge abutments of the entire stress of mastication. On the contrary, if occlusal rests are used, as is the case usually, the strain on the abutments is comparable to that of a fixed bridge. Experience has shown that in many cases the saddle is most certainly a disadvantage, in that it promotes absorption through increasing the stress on the underlying tissues. We have all observed this clinically. When the case is first inserted, the teeth are in correct occlusion, but after a time a marked settling of the saddle develops, especially if the occlusal rests are removed. It is necessary, therefore, to account for this absorption as due to the unnatural pressure upon the tissues. A removable bridge is really a fixed one when under the strain of mastication and it may have the added disadvantage of extensive destruction of the abutments due to the use of attachments.

The only real improvement that can be pointed to in the removable appliances is that the opportunity for cleaning them is better. When we see how this possibility is taken advantage of by most possessors of full and partial dentures, our faith in the cleansing possibilities or rather, probabilities, is sadly weakened. The possibility is there, but it is not taken advantage of.

Briefly then, we may say that unless our technique is vastly improved so that it will become possible to preserve the health of the abutment teeth and at the same time prevent the excessive pressure on the tissues under the saddles, better than we now are doing, removable bridge work will show little improvement over the better fixed types.

The most severe criticism of fixed bridge work has been due largely to the resulting unhealthy condition of the abutment teeth and the surrounding tissues. Unfortunately in a large number of instances this criticism has been amply warranted because the pathological and physiological requirements have been utterly ignored. Too much has been expected of the teeth used to support the bridge. However, when considering the question of the strain placed upon the abutments when a fixed bridge is capable of functioning to a degree somewhat in excess of the normal. If this extra load is not excessive, no ill results will ensue. Indeed, we often find



that the condition of a tooth, both as regards health and stability, is improved by giving it extra work to do. Particular attention must be paid to the articulation of the bridge because severe traumatism may set up irritation and result in the loss of the teeth used as abutments. It may be truthfully said that one of the most prolific causes of failure in both fixed and removable bridges is due to abnormal relationships of the incline planes of opposing teeth.

Perhaps we have been mistaken in expecting too much of fixed bridges. Undoubtedly this type of restoration has an important place in dentistry, but it also has its limitations. As a rule short fixed bridges are satisfactory; for larger spaces, removable types are preferable. Rests should always be used in fixed bridges so as to prevent the rotation of the root of the supporting tooth. Where possible, the bridge should be fixed to one abutment and allowed to rest on the other. This induces a healthy condition to both teeth because it allows of some independent movements.

As already stated, one of the outstanding objections to the use of fixed bridge work has been due to the lack of cleansing facilities. Recently there has been introduced a porcelain tooth with a porcelain tip and a porcelain root extension which aids very much in solving this difficulty. In the preparation of these teeth, emphasis has been placed upon tooth form so that it is possible to use these porcelain teeth in fixed bridge work and reproduce very accurately in the porcelain pontics or dummies, the normal embrasures, normal ligual surfaces, and adequate masticating surfaces. These teeth may be closely adapted to the gum tissues without causing irritation due to the tolerance of the tissues for polished porcelain surfaces.

Porcelain pontics are particularly useful in anterior fixed bridges and are best used soon after the natural teeth have been extracted. The porcelain roots are imbedded in the sockets and the tissues, after a time will be found closely adapted to the porcelain and showing no signs of irritation. Owing to the correct form of these porcelain pontics, the natural embrasures are reproduced thus making for ease of cleansing.

In posterior cases, where complete absorption has taken place, the porcelain teeth may be placed so as to rest against the tissues and slightly impinge upon them. Having a smooth, polished surface they do not irritate the tissues and the perfectly formed embrasures and smooth, rounded sur-

faces practically preclude the possibility of food retention.

One of the most efficient means of attaching bridges, especially in the anterior part of the mouth, is the inlay, preferably with some sort of pin-ledge anchorage, or the three-quarter crown, which, if properly constructed, will have a good appearance, be adaptable, and not require pulp devitalization. In posterior cases, the three-quarter crown, Carmichael, or three-pin inlay serve the purpose. The three-quarter crown has particular value as a bridge attachment because it necessitates no devitalization, requires little mutilation of the tooth, has strength, is adaptable to almost every tooth, and is easily removed when necessary.

The method of construction of these porcelain pontics is fully explained in clinics which are being given at this Convention by the Crown and Bridge section. Much interest centers about this form of restoration because it is really an innovation that is meeting with general approval.

#### PROSTHETICS.

One good resulting from the recent enthusiasm for extraction is the progress made in full and partial denture prosthesis. Many new ideas have been evolved and real progress has been made. It is also gratifying to observe that there is no evidence of complete satisfaction with things as they now are. This is a hopeful sign because contentment often means retrogression; concern begets progress. Prosthodontists refuse to admit finality in their department and are ever striving for better results.

Full denture prosthesis has shown great development during the past few years but much yet remains to be accomplished. It might be stated truthfully, that we understand the principles of retention but do not fully understand the principles of impression-taking. A minimum compression of the tissues seems advisable when taking impression so that there will be as little distortion of the tissues as possible. We should recognize the fact that compression means interference with the blood supply and may even lead to atrophy of the tissues. A careful investigation of the properties of the common impression materials now in use, with a view to their improvement, is very much needed.

Many of the methods of impression taking now recommended are complicated and involved. Some require the use of expensive materials and patented devices which can only



be secured from a few depots and at prices that are almost prohibitive. A simplified and inexpensive technique would be very acceptable.

Muscle trimming is good and should be practiced generally, but many of the prevailing methods are cumbersome. Moderate muscle trimming appears to be all that is necessary for most cases.

An outstanding difficulty in full denture prosthesis is the registration of the condyle path because no simple and efficient method of reproducing the condyle inclination on an articulator has been evolved. True, there are many excellent articulators on the market, but their complexity and costliness mitigate against their general use.

The question uppermost in our minds, when articulating dentures, is whether or not it is necessary to work to the individual condyle path. Some authorities claim that when a slight change is made through the alteration of the occlusal curves, a new path will be induced and prove satisfactory. Others are of the opinion that success in denture prosthesis depends upon strict adherence to the individual condyle path. This individual path we know is difficult to determine because the swing of the mandible is usually different on each side.

Perhaps the most important dictum in full denture prosthesis is that a balanced occlusion is absolutely essential. Conditions similar to traumatic occlusion in natural tests may also be found in dentures. Lack of a balanced occlusion is the basic cause of failure in denture construction. A poor impression with good articulation often proves more satisfactory than the best impression with poor articulation.

Partial denture construction involves some kind of mechanical retention. Various forms of retention have been devised such as the Roach, Gilmore, Griswold, Morgan, Chayes, the split-pin and tube, the telescoping crown, and many others; all of which give evidence of an earnest attempt at solving the difficulties of partial denture prosthesis, but they all possess some objectionable feature. Either they cause too great a leverage on the tooth to which they are attached or they require much mutilation of tooth structure for their retention.

The ideal attachment is one that will give adequate retention with the least possible mutilation of tooth tissue, and will also guard against the strangulation of the periodontal tissues of the abutment teeth.

The most familiar attachment is the clasp, either cast, wrought, swaged or crib. It has been, and probably will continue to be, the most universally used method of retention for partial dentures.

The cast clasp revolutionized partial denture construction and brought into being many new and important alloys. It was found, however, that frequently these clasps caused an abnormal pressure on the abutments which resulted in their migration. Another objection to a glove-like fitting clasp is that it causes a gradual disintegration of the enamel areas covered by the closely adapted metal. This may be due, in part to the rough surface exposed on the inner part of the clasp. Suitable polishing will overcome this roughness or it may be prevented by casting the clasp against artificial stone. We know that the better fitting a band is, the more protection it affords to bacteria, hence the necessity for frequent cleansing of the inner surface of the clasp. Gold or any of its alloys is not sufficiently hard to cut enamel, but the products of bacterial decomposition, similar to that which goes on continuously under the protection of the clasp, will speedily do so.

A mistake is commonly made in expecting the same degree of resiliency in a cast clasp as is obtained from wrought clasps. This is not possible. To obtain the maximum resiliency in cast clasp metal, cool slowly after casting. This has the effect of tempering the metal; cooling quickly, anneals it and destroys the resiliency. It is a good plan to allow the metal to cool slowly and then cut away the investment.

The wrought flat clasp also covers a large surface of the enamel but has the advantage of not being so closely adapted to the tooth, because it comes into close contact with the enamel only at about three points. The greatest usefulness of the wrought clasp is seen in cases involving extremely bell-shaped or malformed teeth.

Many dentists prefer the swaged round wire clasp because it covers the minimum amount of tooth surface, hence affords the least protection for bacteria. A disadvantage is that it does not give the stability of the wrought or cast clasps.

The ideal clasp might be described as one so constructed that the junction between the clasp and denture would permit of a little independent movement and thus break the direct strain upon the tooth, and at the same time cover a minimum of tooth surface.



The seriousness of dental focal infection lessens the value of all attachments that require pulp devitalization, or cause too great a leverage upon the teeth used as abutments. We do not wish to place anything in or around teeth that will cause excessive tooth mutilation or pulp devitalization. It is apparent therefore, that partial denture construction calls for the highest engineering skill and an intimate knowledge of dental histology and pathology.

Broadly considered, every partial denture should depend upon the ridge for taking up the stress of mastication, and upon the abutment teeth only for retention. The saddles should be so designed as to distribute the stress evenly over the entire area. Cast metallic saddles give good results because of less bulk required as compared with vulcanite, and so afford more space for the tongue. The irritation of the tissues is also less pronounced under metallic surfaces than is the case with vulcanite.

There is no single rule applicable to all cases in partial denture construction. The successful prosthodontist must be skilled in many methods and be in possession of numerous devices to circumvent unusual difficulties.

#### PERIODONTOCLASIA.

This department of dentistry has shown remarkable progress and many truly surprising cures have been recorded, such as the regeneration of the alveolar tissue and the physiological attachment of gum tissue to the cementum.

In order to get a correct perspective of this much discussed question concerning the causative factors involved in pyorrhea alveolaris, a brief resumé of the progress of dentistry in combatting this disease is desirable.

As early as 1862, Robitzeck of Vienna treated pyorrhea by excising all gum tissue of an abnormal appearance. A straight incision was made through the soft tissues down to the alveolar process. This was followed by a scraping of the alveolar bone.

In 1869, John W. Riggs of Hartford, Conn., stated that pyorrhea was caused by the irritation of calculi and other accretions upon teeth, contiguous to or beneath the free margin of the gums. Both Riggs and Robitzeck were confirmed localists, in so far as their treatment were concerned.

Eugene S. Talbot was perhaps the first American to take the view that pyorrhea maybe due to both local and constitu-

tional sources. He emphasized the possibility of systemic infection and nutritional disturbances of the underlying tissues giving rise to a pathological condition which in turn was aggravated by the deposits of calculus on the teeth.

W. D. Miller, who has been called the father of scientific dentistry, was the first to isolate the staphylococcus, and albus, and the streptococcus pyogenes from pyorrhea pockets. He also described about sixteen other types that he was unable to isolate. Miller believed that pyorrhea was caused by a wide group of organisms in varying combinations and not, in any case, by a specific type of bacteria.

Pyorrhea vaccines were introduced by Kenneth Goadby of London, Eng., and following this, treatments combining both vaccines and prophylaxis were instituted. In many cases, good results were obtained. About 1916, the vaccine method of treatment was discredited and shown, in some cases, to be positively dangerous.

Then followed a new specific called Emetine. This was founded on the amoeba theory and came into general use. Soon, however, it was demonstrated that surgical methods alone would bring about the same results as Emetine had done, consequently its use gradually diminished.

Succinimide of mercury was next tried. This preparation had been in use as a specific for venereal diseases and a marked improvement in the condition of the tissues about the teeth had also been noted. It was injected deeply into the gluteal muscles. Little has been heard recently of this method of treatment.

From the foregoing it is readily seen that we have been following hit-and-miss methods in our treatments. It is a confession of the fact that we have been baffled as to the real cause of pyorrhea. This unfortunate condition is due primarily to the unscientific manner in which the profession, as a whole, has studied general pathology, physiology and histology. It is also quite evident that without a thorough ground work in these basic subjects, little real progress can be expected.

To-day a large section of our profession, are of the opinion that irritation of some form, usually of a mechanical nature, is one of the most potent factors in the etiology of periodontoclasia, and that traumatic occlusion is chief among the irritants because it causes irritation of the entire perice-



mentum. If continued long enough, it will cause injury to the alveolar process as well. To these dentists, pyorrhea, alveolaris is primarily a disease of the investing tissues of the teeth, that is, the gums, the gingiva, the alveolar process, the cementum, and the pericementum.

There is another important section of research workers, who believe that pyorrhea is a constitutional disease, associated with faulty nutrition and systemic intoxication. Some of these men hold that if the local irritants about the teeth are removed, such as those interfering with the health and resistance of the periodontal membrane, and the constitutional disturbances also corrected, then the results will be satisfactory.

As representing those who emphasize the constitutional factors in pyorrhea, we might quote Sir Arbuthnot Lane, a distinguished English authority. He asserts that pyorrhea is caused, mostly, by intestinal stasis. The basal chronic constipation sets up an alimentary toxemia which poisons the whole system, and the oral cavity, which offers a very fruitful soil for growth of infective organisms, soon becomes disorganized. The pus, that forms about the teeth, finds its way into the intestinal tract and a secondary infection sets up. This view is supported by another eminent English authority, Mr. Harry Forsyth, who believes that there is a dependence of pyorrhea alveolaris on intestinal auto-intoxication, produced by chronic intestinal stasis, a vicious circle of infection and re-infection being thus set up.

From the variety of opinions thus expressed we may deduce this: That it is best, when treating pyorrhea, to eliminate from the oral cavity all likely sources of infection by local measures, resorting to extraction where necessary, and at the same time tone up the system generally, so as to place the patient in a favorable condition to combat the attacks of any gastro-intestinal disturbances.

An urgent need in the treatment of pyorrhea is early diagnosis. We should not wait until the patient directs attention to it. The seriousness of this disease should be ever appreciated and everything done to check it at its very inception.

It is scarcely necessary here, to comment further upon the subject of pyorrhea because of the fact that provision has been made for the presentation, at these meetings of the On-

tario Dental Association, of the complete findings of our research workers. We all await with hopeful anticipation, their reports.

However, with the evidence before us and as we have it up to this time, we are forced to the conclusion that it is not the whole truth to say that in all cases, pyorrhea is a purely local lesion, or that it is a local manifestation of gastro-intestinal disturbances. It may be one, or the other, or even both.

#### PREVENTIVE DENTISTRY.

The difficulties of root-canal work, of periodontoclasia, of partial and full denture construction, and, indeed, of every department in dentistry serve but to emphasize the importance of preventive measures. Heretofore a grave mistake was made in giving practically all attention to measures of tooth repair and replacement and very little, if any, to the prevention of tooth destruction.

Preventive dentistry, to be truly effective, should start with the child; better still, it should start with the expectant mother, for pre-natal treatment though but recently recognized has amply proven its worth.

Mrs. Mellenby whose work in connection with the teeth and nutrition, is so widely known and appreciated, points out that many deciduous teeth which appear perfect to the naked eye, on microscopical examination frequently reveal defective formation of both the enamel and dentine. Over eighty per cent. of deciduous teeth examined, showed imperfect calcification, and of these the great majority were carious. Now, in view of the fact that the deciduous teeth begin to calcify before the birth of the child, it is obvious that preventive dentistry finds its place in the early foetal life of the child.

We know that food has an important relationship to tooth formation, and that a diet deficient in mineral salts, particularly calcium, will detrimentally effect the dentition of both the mother and child. Therefore the need of a suitable diet for the expectant mother should be emphasized at every possible opportunity.

*(To be concluded)*



## Academy of Dentistry, Toronto

The opening meeting of the Academy of Dentistry, Toronto, took the form of a Dinner meeting, at the Prince George Hotel, on Monday, October the 6th, at 6.15 p.m. This meeting was not only for members of the Academy, but for every dentist of Toronto. There was no dental essayist, but for the nominal charge of one dollar per cover each enjoyed not only a good dinner, but also the privilege of mingling with professional brethren and of listening to Dr. R. Bruce Taylor, Principal of Queen's University, Kingston. The other speaker of the evening was a prominent citizen of Toronto, one of our Provincial cabinet ministers.

Dr. Harry Thomson of the Dental Hygiene Council made an announcement which was of interest. His plan, if adopted, will require the co-operation of every city dentist.

The stated meetings of the Academy for the season 1924-25, will be held in the Academy of Medicine Building, Queen's Park. The membership fee is five dollars. The programme promises to be of even greater interest and benefit to the profession than those of past years. It will be approximately as follows:

November meeting—Dr. Clarkson Fox of Detroit.

December meeting—Progressive Clinic, Dr. Ante, "Preparation of Abutments for Crown and Bridge Work."

January meeting—Two essays by Dr. Weston Price of Cleveland.

4.00 p.m. subject—"Researches on the Relation of Dental Infections to the Degenerative Diseases."

8.00 p.m. subject—"Newer Knowledge of Calcium Metabolism in Health and Disease."

February meeting—Individual Clinics.

March meeting—Essayist to be announced later.

The following study groups will also be held—"Preventive Dentistry, Full Denture, Partial Denture, Crown and Bridge Work, Periclasia, Exodontia, Minor Oral Surgery, Porcelain." Any other subject may be studied, provided ten men make the request for same.

You will agree with us that we have here outlined a programme that cannot fail to be of interest and benefit to every dentist who avails himself of the opportunity presented.

Yours Fraternally,

S. Stuart Crouch, Secretary.

The Academy of Dentistry

## Correspondence

**A Burning Sensation in the Tongue**

Dr. A. E. Webster, Toronto, Ont.

Dear Dr. Webster:—I thought I would write you concerning a patient of mine and probably I might get some information from you with regard to the case.

My patient is a young man 34 years of age who has been coming to my office occasionally for the last twenty years.

In April, 1923, he came into my office complaining of a burning sensation on the left upper side of his tongue although there was no indication on his tongue of any trouble.

His teeth were in fairly good condition, all vital except one lower second bicuspid on the right side and one upper second molar on the left side. I devitalized these teeth some time ago and filled them carefully. They have been comfortable giving no indication of trouble.

When he came to me in April, 1923, I went over his teeth carefully, cleaning them thoroughly and polishing them. I advised him to give up smoking which he did, and gained shortly afterwards about twenty pounds. This burning sensation in his tongue did not get any better, so he consulted several physicians of the highest reputation in Ottawa. One physician who was a specialist had his teeth X-rayed and of course found these two dead teeth and advised him to have them extracted and he would then be better. I extracted them much against my wishes, particularly the one on the opposite side from the burning sensation in his tongue. There was no improvement in his tongue afterwards. Patient's blood test was normal, kidneys normal. Physicians then advised him to have his tonsils out and it would effect a complete cure. He had his tonsils out and still no better.

About six months ago he got me to extract his upper first molar on the affected side. He insisted I should do so. Finally I complied with his request very reluctantly. Physicians also examined him for syphilis but no indication of that.

When he is chewing gum or eating the burning sensation disappears but returns immediately afterwards. Patient is afraid of cancer setting in. He has no constipation and appears to be very healthy. Family history is good. The family have been patients of mine for over twenty-five years. I made the mother an upper and lower dentures about twenty-three years ago and the father upper and lower dentures about two years ago. They are both healthy and well.

My patient came in the other day and requested me to extract his upper second bicuspid on the left side, but I absolutely refused to extract any more teeth for him and decided to write you informing you of the history of the case.

The doctors here (specialists) are all puzzled concerning his case. Patient is rather worried about this burning sensation in his tongue because he is afraid of cancer setting in.

Any information you could give me concerning the case would be thoroughly appreciated.

*Will some reader give an explanation of the cause of this patient's trouble.*—EDITOR.



# Editorial

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A. E. Webster, M.D., D.D.S., M.D.S., Toronto, Canada.

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Vol. XXXVI

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No. 10

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## University Teaching of Dentistry

Every now and then during the past twenty years or more, the matter of the University of Toronto taking over the teaching of Dentistry from the Royal College of Dental Surgeons has come up for discussion. Its advocates and opponents express their views for a time and then the matter is allowed to rest for a while. The reasons for opposing University teaching are changed as necessity demands. It was at one time held that a university did not have sympathy with the teaching of professions, and especially those based upon the sciences. The answer to this has been that practically all the medical engineering and dental schools of any note are departments of universities. No one who has followed the trend of dental education offers any objection on the ground of a University's inability to teach the subjects involved better than a private college or the profession itself. So far as Ontario is concerned there are special objections offered. Chief among these is: If the University of Toronto establishes a faculty of Dentistry other universities of Ontario will do the same. The answer to this statement is, whether the University of Toronto teaches dentists or not does not change the present powers of other universities or the Board of Directors of the Royal College of Dental Surgeons of Ontario. Under present regulations a university can teach dentistry and send its candidates to the Board for examination for a license. The real hindrance to such action is the cost and the high standards demanded by dental boards.

Another common objection offered is that if dentistry is taught by the University the profession and the teaching staff will be separated or not be so sympathetically related as now.

If the university teaches dentistry as a faculty the profession will be represented on the Senate of the University, where it can exercise its power under the tempering influence of the brightest minds in education. The faculty will not be any less representative of dentistry than now, except that it will have the broader view point. It is feared in some quarters that the university might dominate dentistry: such could not be, because the Board gives up none of its prerogatives or powers. It dictates the qualification of admission to the study of dentistry, the subjects of study, the time spent in preparation and the qualification to practise. The university's attentions are all on education and not on the administration of professions. There are many other aspects of this subject which all other countries have settled in favor of university teaching which might well form the basis of a free discussion.

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## Notes

Dr. H. J. Henderson has been appointed school dentist for the city of Victoria, B.C.

In making a diagnosis we make more mistakes by not looking than by not knowing. Jenner.

The attendance at the practitioners course in Royal College of Dental Surgeons, Toronto, was very satisfactory, as was also the general interest shown.

Charles Mayo believes that medical and dental students should be educated together for two years and then each branch off to his own specialty.

Dr. Jackson, of Hot Springs, Arkansas, reports a case of a broken hypodermic needle in the jaw, which was finally located by the aid of transillumination.

Officers of the Dental Board of Quebec: President, Ernest Charron, Montreal; 1st vice president, Alexander Lemieux; 2nd vice president, F. H. Bradley, Sherbrooke, Quebec; registrar, Denis Forrest, Montreal.

Since it is quite evident that human teeth are defectively developed by bad feeding of the mother and the child, the problem of the care of the teeth cannot be one of filling teeth alone. Dentistry must open out its view point.

Writers on dental caries usually say that irregular teeth are more decayed than regular ones. Upon what basis is this statement made? The chances are it is just a guess. We have not come across the statistics to substantiate such a statement.

Lime deposits, wherever found in the vegetable or animal tissues, is of bacterial origin. Pulp stones and pulp tissue deposits are only found in a diseased pulp. Many dentists believe that systemic disease may have its continuance from pulps containing pulp stones.

Dr. Size, Vancouver, thinks that the only just and honorable way of Canadianizing the dental profession in Canada is for the legislators to enact laws compelling provincial Boards to register any dentist who has practised dentistry in Canada for ten years is of good moral character and who applies for registration, and further to register any Canadian University graduate in dentistry who has practised his profession in Canada for at least three years after graduation without any further examination.



Dr. Louis Arthur Stern has passed the licensing boards examination in Saskatchewan.

The annual Golf Tournament of Toronto and district was played at Weston Golf Club, October 1st, 1924.

Dentistry in Ontario is now or can be made a faculty worthy to be accepted in the community of faculties.

Dr. Geo. K. Thompson carried an invitation to the officers of the Canadian Dental Association to meet in Halifax in 1926.

A daily paper of Montreal gives a whole column on the subject of transplantation and replantation. It is interesting information for the laity.

When there is so much opposition to vivisection it is unwise to publish in semi-professional literature pictures of animals being used in laboratories for experimental purposes.

The technique of mixing cement is well set forth in Milford News when it says deliberation, rapid movements and a free firm hand are essentials. Too much powder at once makes for rapid setting and porous cement.

There are fifty-four students registered in the first year of dentistry in the R.C.D.S. This is not sufficient to maintain the loss by death and retirement in the Province of Ontario without supplying any for the balance of Canada.

In presenting reasons for the University establishing a faculty of dentistry in full as medicine, and engineering, there must be two premises accepted. The University introduces the highest ideals in education and educational organization.

Dr. Weston A. Price makes a complete and positive exposure of Abram's methods of diagnosis and treatment of disease. It is surely the greatest swindle yet presented in the name of medicine. The report may be found in the Journal of the American Dental Association for August, 1924.

A vaccine for the treatment of pyorrhoea and other dental infections is being introduced by Lee S. Smith & Son, Pittsburg. It was developed in France, and has met with some favor there; a few in Canada, especially in Quebec, have used it with satisfaction. The American agents will be glad to send an interesting treatise on the matter.

Pulp canal treatments have in the past been a harassment to dental practitioners in Nebraska, so a dental sheet says, because of their inability to proceed with service until the pulp canal treatment is satisfactory. This statement implies that pulp canal treatment is not a service but the filling, crown bridge or denture are the service. Such is the view of the dentist who must always fail in pulp canal operations.

The British Journal of Dental Science discusses the problem of oral prophylaxis as presented by American writers which call attention to the prevalent use of the toothbrush in America and its value in preventing caries and 96% of American children have caries while 96% of southern European children have sound teeth when they reach America, but soon have as much decay as native Americans. The author also says dental caries is a constitutional disease. The Journal in closing its criticism of this author says, of what value are the convictions of such a writer as this? The pity of it is some may be deceived by it.

## Book Reviews

A MANUAL OF HISTOLOGY AND ORGANOGRAPHY BY CHARLES HILL, B.S.M.S.,  
PH.D., M.D.

Published by W. B. Saunders, Philadelphia and London. This book has reached the fifth edition. The preface says the oral cavity deserves more attention than is usually given this subject. Neglect of the care of the teeth is a common failing and the cause may be traced directly to a lack of knowledge of their structure and function. Much of the matter and the illustrations are selected from the works of Frederick B. Noyes. The text is clear cut and concise, the illustrations are numerous with the descriptions directly under or on the picture. The publishers have done well in not making a book on this subject so large that it might discourage the student at the outset. Price \$3.50. Canadian agents, J. F. Hartz Co., Toronto, Ontario.

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POIK'S DENTAL REGISTER AND DIRECTORY OF THE UNITED STATES AND  
CANADA

The publishers have sent a questionnaire to every dentist whose name could be secured, including the 3,511 who graduated within the last two months. It is seven years since the 1st Dental Register appeared, and since then over 22,000 have graduated from dental colleges whose names have never appeared in a Dental Register.

This book has always been of great value to the dental profession, to editors, to publishers, to the dental trade and to all who are in any way interested in the progress of dentistry. A reliable, up-to-date list of dentists, with the additional information which this well-known publication has always presented, is an urgent necessity.

It is manifestly impossible for any one to compile such a work, to make it complete, reliable and of value to the dentist, without the prompt co-operation of every dental practitioner. It is of great importance and value to the dentist himself that his name and address appear correctly in the Register. The dentist assumes no obligation whatever. Unless the questionnaire is returned, the publisher must omit the name. The profession is urged to co-operate to the fullest extent by filling out the blank (which takes but a few moments), without loss of time after it is received, and mail it to R. L. Polk & Co., 536 S. Clark Street, Chicago. A return envelope is supplied for this purpose.

Any dentist who has not received a questionnaire, is urgently requested to send in his name and address and a blank form will be sent to him. The important point is: **PROMPT ACTION**, and thereby enable the publishers to do each one justice by recording his full and correct information.



# Dominion Dental Journal

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## \*The Building of a Successful Ethical Practice

*Donald M. Gallie, D.D.S., F.A.C.D.*

We are frequently reminded that the dentist, like the surgeon, is of lowly origin. It is interesting to turn back the pages of dental history in the new world and study the character of men, and the work done in the early years. It would appear as though the first dentists we know much about were men, who had some claim to the term professional men. Isaac Greenwood, first recorded as a practicing dentist back in 1750, came of good English stock. His father was a professor in Harvard University, and later, pastor of Old North Church, Boston. It seems that Isaac inherited much of his father's cultural qualities, and it is natural to suppose that he had great faith in the future of dentistry, for of five sons, four were instructed in the art of dentistry. The oldest son, John, achieved special distinction as a skillful dentist and a gentleman of his time. In his day his principal claim to fame was as dentist to His Excellency, George Washington. He is best remembered by the profession as the preceptor of Horace H. Hayden, one of the real founders of modern dentistry. It is reasonable to assume that Hayden's splendid career could, in a measure, be traceable to the example set by Greenwood. Other men of Greenwood's time were men of high professional ideals.

LeMaire, the skillful and cultured Frenchman, was the sort of man to encourage and inspire the men of his day to take up dentistry. His most promising and afterward his most famous pupil was Josiah Flagg, the first native son to practice. Josiah believed in advertising. It is amusing to read his claim of skill in transplanting teeth, curing ulcers, drawing without pain, mending teeth with gold foil, sewing up harelips and correcting pronunciation. He sold by the wholesale and retail everything from dentifrices to chew-sticks and toothbrushes. His advertisements make the modern advertising dentists look like pikers. However, we must remember in those early days it was necessary to let the public know what dentistry meant. Flagg was an exceedingly skillful man and a gentleman in all the word implies. The professional and social success of these pioneers attracted many unscrupulous men who had no professional understanding or ideals, possessed little or no skill. They were charlatans, not artisans.

The result was for some years dentistry was in bad repute. Then came the great revival through the efforts of Hayden and Harris, the founding of the first dental college, the publishing of the first magazine,

and the organization of the first dental society, all within eighteen months, and all co-ordinating. This gave us the right to claim the status of a profession.

What strides have we made in the art, if not the science of dentistry? We became skillful craftsmen, we became masters of reparative procedures, but in spite of our superior technic we continued to fall hopelessly behind in combating caries. In recent years we have come to realize that we must not only advance in the art of repair but strive unceasingly to master the science of prevention. To this end we have raised the standard of matriculation repeatedly, that we may have a class of men, fundamentally prepared to understand the sciences.

In my time I have seen the advance from graduation from grammar school to the one year pre-dental course in most colleges and a two years course in a few. I have seen the college course advance from two years of six months to four years of thirty-two weeks. I have had a good chance to study the annual output of the past thirty-three years, twenty-nine years in college work and four years as member of the State Board. Were you to ask me what improvement I have observed in the technic and scientific understanding of each succeeding class, I can only say splendid. Were you to ask me my opinion of the professional and ethical standards of the recent years, I say encouraging, although I confess higher education has not entirely eliminated the man of unethical tendencies. He may not be the crude type of years ago, with the large signs and extravagant claims of skill; instead we have the more subtle and dangerous type, who capitalize the fears of their patients, who are more concerned in *selling operations* and splitting fees than they are in rendering true professional service. You cannot depend on education entirely to build the foundation for a professional man. You must look to the man. "As a man thinketh in his heart so is he."

As far as we can look back we associate the question of ethics most intimately with the professions. Why should we not have the same standard of honesty and integrity or Code of Ethics govern all callings? What is meant by ethics or ethical practice? According to the best authorities it means treating of or relating to manners and morals.

Matthew Arnold "Literature and Dogma" says, "Ethical means practical; it relates to practice or conduct passing into habit or disposition." This definition would certainly make the application of the term very elastic; individuals or organizations could stretch it to embrace most anything.

The world at large demands a stricter code for the dentist and doctor because they say we safeguard the health and lives of those we serve; that is true. Think of the many businesses that are supposed to safeguard health and lives and look at the infractions. Take the manufacture of foodstuffs. Until the rigid enforcement of the pure food law, there was hardly a manufacturer of food products who did not adulterate or substitute health-destroying or death-producing ingredients. Think of the crime and the tragedies as a result of war profiteering, by men who had a high position in the business and social world and who were expected to safeguard the health and lives of the brave lads who answered the call! Look at the disclosure of crooked government officials, enough to wreck our very foundation, and shatter the faith of our people! At this time, when the whole world seems to be suffering from moral collapse there should be a renewal of faith in the greatest code of ethics—the Golden Rule.



In considering the question of how to build a successful ethical practice, we must start at the beginning of a man's professional career. First, what kind of preparation has he undergone? Has his Alma Mater prepared him scientifically, technically, and ethically for his life work? The blame for all a man's shortcomings are laid at the door of the college by some men who think they know more about running a dental college than men who have made it their life work, and who have made tremendous sacrifices by so doing. The advancement in dental education has kept well abreast of the other professions. The sciences in all Class A colleges and in many Class B are taught by all time men, graduates of the best universities and masters of their subjects.

In the college I am connected with, our students have the same science teachers as the medical students. No allowance is made the dental student; he takes the same histology, bacteriology, physiology, histo-pathology and chemistry as the medical. One of the most important assignments for our students, are his days in the examination room under the skillful guidance of a capable diagnostician. He is required to make his examination, report his findings, and in many cases write up the case history. One of the greatest advances in dental education is the seminar courses, and the requiring of students to write frequently on different subjects. This makes him read and study, and soon develops a taste for writing.

I think you will agree with me that the outstanding weakness of the dentist of today is his indifference and inability to write. The teaching of the practical branches has reached the highest point of excellence. The heads of the practical departments in most of our colleges are men of national, yes international reputation. They have gathered around them a corps of instructors and demonstrators that are accomplishing wonders. I wish every one of you who have been out of college some years would make a pilgrimage to your Alma Mater and see the improvements in teaching methods, and the development of technical skill. You would come to the conclusion that the new graduate, if locating in your town or near you in the city, would be a competitor worthy of your respect.

During the past few years it has been my privilege to visit nearly all of the more important dental schools in the country. What I know and what I have seen warrants me in making this statement. The average senior student is doing better root canal work, prophylaxis, crown and bridgework, gold inlays and amalgam fillings than the average practitioner today. I firmly believe that the new recruit is fundamentally and technically fitted for his lifework without fear of failure. The inspiring of a young man with the ideals necessary for a true professional man is a difficult problem for the college. You cannot remake a man in four years.

This ethical question is not as complex in Ontario as it is with us on our side of the line. There are few dental colleges in the world that enroll as high a standard of matriculants as you do in Ontario. They come from good stock, mostly English, Scotch and Irish. The day of the preceptor is over; they have learned nothing you must undo; they come to you from the university, the school-room where they have been teachers, or from positions that required educated men. After matriculation you are all the product of one Alma Mater. I understand that practically one hundred per cent. of the dentists of Ontario are graduates of the Royal College of Dental Surgeons. You have received your instruction from the same faculty, you older ones from the grand old man of Canadian

dentistry, Dr. J. Branston Willmott, Luke Teskey and W. J. Stuart, the younger ones from Webster, Seccombe, Willmott, Box and their associates. You have had in your ranks leaders that stand for the highest ideals, men like Harry Abbott, Dr. Chittenden, Dr. Nathaniel Pearson, George Caesar and your own and our own C. N. Johnson. Surely the lives and work of these men should be a standard for the men of today and the men of tomorrow.

What a different problem we have! The product of fifty colleges, in the past, some good, bad and indifferent. Today mostly good. We have the horde of foreigners, and they are mostly bad or tricky, who come with all kinds of phoney credentials, certificates and diplomas, and who get by some State Boards, and then in time to other states, through reciprocity. The wonder is that we have not more of the unethical. Thirty-three years association with dental students, and the close relationship that develops between many of them and the heads of the practical departments have given me an opportunity of keeping in touch with a great number. They write me about their successes and disappointments. When I meet them at dental gatherings, they relate their experiences, and it is interesting to learn the attitude of the established practitioner toward the new man. It is gratifying to state that the great majority are received into full fellowship, but occasionally the new man is looked upon as an interloper and receives scant encouragement. What an uphill fight for a beginner! Is it any wonder if he is tempted to resort to unethical means to get a start? How much more likely that boy is to start right and continue to go right if the established man would make him feel welcome and on an equality.

The building of a professional business differs materially from that of commercial, mercantile or industrial. The personal equation enters so intimately into a professional career, so naturally personality is one of the big factors in building up a practice. In the April number of the American magazine, the leading article has created considerable comment. It is entitled "Personality, its Twenty Factors and How You Can Develop Them." It is an interview with Dr. Werrett Wallace Charters, a Canadian and head of the Bureau of Research, University of Pittsburgh. I take the liberty of using a few of the twenty factors that I think fittingly apply to the dentist:

**Ambition:** Have you the real will to improve yourself, not merely a vague intermittent desire?

**Industriousness:** Have you the ability to drive yourself steadily? Do you faithfully perform tasks that are distasteful?

**Forcefulness:** Do you give people the impression that you are capable and self-controlled; are you self-reliant?

**Friendliness and Cheerfulness:** Do you depress people? Or are you a cheerful companion? Nothing is more contagious than cheerfulness. A cheerful dentist creates a cheerful atmosphere. Yet I know some dentists who say friendliness and cheer interfere with professional dignity.

**Neatness:** Is there any calling that demands a higher degree of neatness than the dentist? Clean in body and mind; neat in attire, office in good taste, and tidy; instruments and equipment in order. When you think of the lack of these in so many offices, you wonder how they ever get a refined cultured patient.

**Effectiveness of speech:** This factor is essential in and out of the office. I know a legion of men who outside of the knowledge of their



business are regular dumb-bells; they are hopelessly lost in conversation, and discussion of current events and world affairs, or the literature of the day, and how easy it is to obtain this knowledge. The splendid weekly and monthly magazines are teeming with up to the minute information; the great dailies have either foreign correspondents or associated press facilities that keep us posted on international affairs, and the weekly book review in the press keeps us acquainted with the best literature. What an advantage the well read and posted man has in society compared with the fellow who is only familiar with the scandals of the day or who can give you the batting average of the ball teams! Which is likely to attract the class of patients that are pleasing and profitable? I have known many men of impressive personality but mediocre ability as dentists who have been very successful, but it does not follow that this is general. Above everything else a man must have skill and judgment if he expects to enjoy a full measure of success. I do not mean that he must be a technical wizard, simply of good average ability. A few, no matter how diligently they strive, will never rise above the ordinary; nevertheless the great rank and file can, with the facilities at hand, become skillful, even expert in some, if not all, branches of dentistry. Our colleagues of the medical profession in the past have enjoyed advantages that were denied us. When they felt the need of up-to-date medical knowledge, or surgical technic, they could go to the many postgraduate schools in this country or in Britain and Europe. It is only in recent years that we could get anything like real postgraduate work in our colleges. I happened to be in Toronto last fall on the opening day of the postgraduate course in the Royal College, and the splendid attendance and the calibre of men I saw testified that the dentists of Ontario were alive to the need and benefits of such a course.

The organization of study clubs and clinic units throughout the country has been the greatest boon for better service and improved practice, before dental societies took up this work, and I regret to say they deferred it too long. A few experts in different specialties formed classes in different large cities and gave excellent instruction, the classes running from one to two weeks. Noting the success of these classes a number of dental adventurers formed classes for every conceivable procedure, from how to soak a patient to alveolectomy, at a charge of fifty to one hundred dollars a man. Some of these courses consisted of a day's instruction; thank goodness their day is about over! I consider the Province of Ontario a very favorable field for this type of postgraduate work. Your large towns and cities are well distributed. The dentists within a radius of miles could conveniently meet in these centers. In sections not in close proximity to the large cities, clubs and units could be formed by one, two or three counties. With the improved roads, interurban service, your Rolls-Royce or flivver, it is easy to reach any point during many months of the year.

The study club and clinic unit is especially valuable to the rural practitioner, not that the country dentist is not as skillful as his city brother, but because he must be a better all-around man. The city dentists' mistakes are lost sight of in the many activities of city life; the mistakes of the country dentist are advertised to the whole community. The city man has the advantage of consulting with specialists or skillful friend if some procedure baffles him; the country dentist has to work out his own problems. Take as an illustration, denture construction, partial and full, which plays such an important part in the success and failure of a dentist, especially the country dentist. I know of no branch of dentistry that has made greater

advancement than impression taking and denture construction, and the man who masters this new technic will soon establish a reputation that will overshadow the competitor who is too busy to attend dental meetings or join study clubs. The laity will soon learn of your efforts to keep up with the times, and you will be rewarded by their confidence and patronage.

When Black first presented his work on cavity preparation and his principles of extension for prevention, the dentists of the east damned it with faint praise. Many were hostile, but out in the middle west a little band of earnest men met and organized Black Study Clubs in the States of Wisconsin, Minnesota, Iowa, Nebraska and a part of Illinois. The members of these clubs met for a day and evening once a month. Some traveled hundreds of miles, giving up time and money that they might become expert and serve humanity better. The enthusiasm, earnestness and skill of those men have been felt throughout the land. There is no section of the world today where you will find better dentistry than in the States I have mentioned.

The dental society, the study club and the clinic unit is a practice builder and you are not eligible to such company unless you are ethical. The dentist who says he has no time for interests or activities outside of his practice is not living up to a full measure of citizenship and is overlooking a great opportunity of improving his practice. We frequently hear the statement that a dentist's hours are so long and his work so arduous that he finds little time during the day and is too tired at night to take a prominent part in the political, civic, social and religious life of his community. The excuse is a poor one. The busy lawyer who frequently has to work far into the night, studying the law pertaining to his case and writing his brief finds time to be conspicuously associated with various activities; the physician, whether he be specialist or general practitioner, has a full day, and many times nights without rest. The very nature of his work is a great call on his physical and mental forces, yet one finds in all the broader activities the physician taking a leading part. I can recall a great number of medical men who have served with distinction in your Dominion and Provincial legislatures. The dentist, though his day is long and he may have some irritating problems, yet when he turns the key in his door he locks his troubles behind, and is at liberty to spend his evenings in some diversion.

Our work brings us in close contact with the heads of families, and the children from the time they are little tots until they reach manhood and womanhood. This should naturally secure for us the confidence of our community and make us eligible to leadership in the many educational, uplift and welfare movements that are claiming the interest and support of our best citizens.

The severest indictment I have ever heard against dentists was delivered by the head of the Department of English in one of our largest American universities. He was the guest of the faculty of the college I am connected with. I know he did not secure us for the purpose of humiliating or embarrassing us; instead it was to impress us as teachers, that our duty did not end in making dentists of our students, but that we should go farther and encourage them to attain some prominence in the great game of life. He frankly told us that we had no place in the world of letters, art or music, no prominence in politics, no record in public life, and were unknown in financial circles. He concluded by saying: I have heard from a reliable source that there are not four dentists in the City of Chicago whose worldly



possessions amount to fifty thousand dollars. I plucked up my courage to remind the gentleman that if the standard of measurement of a man was the money he made, then his calling, that of teaching, would be zero among professions.

One of the outstanding factors in building up a successful practice is the starting with or acquiring as soon as possible a suitable equipment, one that will be attractive to our patients and possess all the facilities necessary for our various needs. The day of the old plush chair, red glass cuspidor and the foot engine has passed. Every hamlet has electric current and some kind of water pressure. Last fall I was invited to speak before the American Dental Dealers' Association at their annual meeting in Chicago on the subject: "Dentist and Dealer." I felt that I could register some complaints, suggest some improvements, and pay many compliments to this splendid organization. In order to secure some data on the quality and cost of equipment for different professions, I visited two surgical supply houses, and an engineers' and architects' outfitting company. I found that dental equipment was superior in design and workmanship. There is nothing to compare with our chairs, cabinets, units, motors and accessories. They are costly, but will last a life-time. I discovered that it cost much more for a dentist to start with adequate equipment than any other profession or calling.

In presenting these facts to the dealers I reminded them that a very large percentage of dental students were working their way through school, or were the sons of parents who were making great sacrifices to give their boys a dental education. When they graduate they are in debt. My plea was that they should have a heart and not load a beginner up with a lot of unnecessary and elaborate equipment, placing a financial obligation on him beyond his capacity to pay. A month before graduation our seniors are besieged with smooth-tongued salesmen and efficiency experts who try to convince them that to be successful they must install the finest units up-to-the-minute, radiographic outfit, an autoclave and a reception room furnished with period furniture. I give way to no one in my appreciation of a well equipped and artistically furnished office, but I have seen so many come to grief, who were under the impression that an elaborate outfit was the one essential that led to success. The opinion prevails among many that elaborate equipment and furnishings are a sure path to big fees. The efficiency expert told them so.

What a part the question of big fees seems to play in some offices today! It would seem as though the dental slogan is "Get the money." We all know that in the past too many dentists were insufficiently compensated for their services, and that far too many have labored for years and in the sunset of their lives would be in distress were it not for the aid of family or friends. Dentists' fees have not kept pace with the great advance in price of everything we use in practice. Rents have been doubled, dental equipment has more than doubled, supplies and laboratory work the same, and the expense of the home has increased alarmingly. Yet how many dentists have increased their fees one hundred per cent? There are some, however, who place no limit on the value of their services. The fantastic fees that we hear about are almost unbelievable. In the building where I am located we have 254 dentists and 406 physicians. Every dentist has a woman assistant and there are one or two in every physicians suite. With such a large number of women engaged in similar work it is quite natural that there should be some comparing of notes. The stories that go the

rounds through this channel about fees would lead you to believe that the Golden Rule is out of date. These professional brigands are doing dentists and dentistry a great injury.

With the ever-increasing demand for good dental service, there is no reason why the dentist of today and the future should not enjoy the fruits of his labor, and make adequate provision for his declining years. He can, providing he does not allow his tastes to grow faster than his income; he can, if he does not fall for the get-rich-quick schemes; he surely will if he conducts his practice along systematic and sound business lines. There are too many dentists who are practicing in a haphazard business way, without any idea of the cost of doing business, and totally ignorant of their fixed overhead expenses, and wondering at the end of the year where their earnings have gone. The day has passed when it was considered bad form to associate business methods with practice. The stern exigencies of the times compels us to adopt some of the methods of the commercial world. We hear considerable nowadays about working and charging by the hour, time stamping the patient when they come and again when they leave; personally I do not like this trade union way of charging, nevertheless it merits some consideration.

I know many excellent ethical men who have adopted this system and they claim it is the only equitable way. I would suggest as an experiment that you adopt this—a simple method of ascertaining just about what your hourly compensation amounts to. Have your secretary keep a time record of several patients with a variety of work from the beginning of the work until its completion; make your charges in the usual way, regardless of the time record. When through take the amount of your charges, divide it by the hours recorded and see what it will average. If the average is not high enough, then you know your fees have been too low. You must also make allowance for bad debts and the unproductive hours. Several writers who have made a study of dental economics state that fully 40 per cent. of the time in our office is nonproductive. Many of these nonproductive hours can be eliminated by having efficient help.

Every dentist should have a capable woman assistant, not simply a girl in the office. She should be capable of keeping his records and books in a systematic way and attend to collections; help him at the chair and relieve him of much of the laboratory details. If practice warrants it there should be one girl for secretarial work, and one or two for the operating room and laboratory.

Many of us can reduce our nonproductive hours by limiting the number of patients we see in a day. If we would give hour appointments, we could accomplish much more, do better work and give greater satisfaction to our patients. Most of us try to see too many patients in a day. One hour a day or more, if need be, should be devoted to short time appointments, examinations, consultation, and a charge should always be made for such services. We are all annoyed and lose much time by the patient who drops in any old time on the flimsiest pretext, requests immediate attention and too often expects such service without charge.

A common fault in many offices is the disregard of the value of the patient's time. We should not forget that the time of many of our patients is just as valuable as ours. Nothing provokes a business man more than having to wait from fifteen minutes to an hour, then have the dentist putter around for a few minutes and give him another appointment. Many a good patient is lost in this way.



In discussing office management, this question is frequently asked: Should we give a patient an estimate of the cost of the work to be done? When you consider how some have been stung by unreasonable fees I think they are justified in asking something about the cost, and I think it advisable to give an estimate, but it should be flexible enough to allow for unlooked for conditions. To give anything like an intelligent estimate, it is necessary to make a very thorough examination. This takes time and the first item to be included in making the estimate is a good fee for the examination. The discussion of the probable cost of work usually leads up to an understanding as to how the payments are to be made, and there should be a definite understanding between patient and dentist on this question. It will prevent subsequent misunderstanding, and you will have fewer bad debts at the end of the year. We all have patients whom we know are dependable and able to meet any obligation. Completion of the work and rendering of statement brings a prompt response. However, they are the exception, not the rule. Every dentist should have his statement out the first day of the month and they should be statements of work done up-to-date as well as completed work. Many cases take months to complete. There is no reason why we should wait until it is finished before receiving any compensation for services rendered. There is also the additional advantage of keeping the patient familiar with the progress of the work.

Do not be afraid of offending a patient by pressing collections. The honest ones will appreciate your business sense, and the sooner you find out the others, the better.

According to reports from banking, mercantile, industrial and agricultural sources, the country is going through a season of business depression, naturally the profession will feel the effect of this condition. It can only be temporary. There are some hopeful signs that the wounds of war which the whole world is suffering from will be healed, and once more we will return to our normal condition, a prosperous happy people in a land of peace and plenty. The future of dentistry is indeed bright; everything tends to increase the demand for service; the profession is united, no factions, no cults, no pathies. All that is necessary is to render honest conscientious service.

### DISCUSSION

The Chairman announced that Dr. A. W. Thornton, Montreal, was unable to be present, but had tendered his best wishes for a successful Convention. He therefore called upon Dr. R. G. McLaughlin to take his place in opening the discussion on Dr. Gallie's paper.

Dr. McLaughlin: Our very worthy Chairman came to me just as I sat down to lunch today and said that Dr. Thornton could not be here to discuss this paper and that he was asking me to occupy two and a half minutes in expressing our appreciation to Dr. Gallie and to say something. I felt, Gentlemen, that it was almost an injustice to Dr. Gallie, a man who has come the distance that Dr. Gallie has come and who has given the thought and his personality and skill to the preparation of that valuable paper, and also I felt it was an injustice to the importance of his subject.

Dr. Gallie comes to us for the first time, I believe, in many years, and he has blazed the trail, so to speak, in occupying our attention with this sort of a paper. "How to Build and Retain an Ethical Practice" is one of the burning question in Dentistry, and I believe in Medicine, today. There was a time some ten or fifteen years ago when a young man of ordinary

ability settling down, we will say, in the City of Toronto, found very little difficulty in working himself into a very lucrative practice in a comparatively short time. That day, Gentlemen, for some time at any rate is past, I may say in the City of Toronto, and perhaps the same thing is true in the other parts of the Province and of the Continent of America.

Dr. Gallie has treated the subject in a very broad and efficient way. He has thrown a great deal of thought, and practical thought, into the treatment of this subject. He started away back at the preliminary education of the would-be dentist, and rightly so, has laid great importance upon his academic education and his culture as would naturally follow from a proper preliminary education. We know this: that when a young man goes into a locality to establish himself as a dental practitioner in that particular town or that particular city, there are at least two pieces of baggage that he must carry with him and make use of if he is going to make a success of his practice in that particular town. In the first place he must have with him what we know as "Efficiency," and in the second place he must possess the other that I spoke of as "Character".

Now my experience for some years in practicing, and the experience of others with whom I have conferred, has led me to this conclusion, that the average patient of today is not looking for the highest degree of skill always in the case of his or her dental adviser. They do ask for, at least, the average amount of skill in that particular town or city; but there is one thing that the public today and always did appreciate in their dental adviser, and that was dependency, or character, or personality. What they feel they do want to know about you and about me is that if Mary or John, the little boy or the little girl in that family, is placed under your personal care, as the dental adviser, that they will receive conscientious care from you, and that you will render just as good service to that boy or girl as you would render to the father or the mother who might know more about it.

Now Dr. Gallie has spread out his paper to cover a very wide area and a great deal of sound advice is given to us in that epistle that he has read. May I in a word, in a moment, attempt to boil that down into one universal or fundamental law that will be a guide for the young man who has just graduated from College, that he may take with him as a universal guide to help him to establish himself in the city or the town which he is to enter. He naturally has great fears as to the possibility of failure. We all had those in the first few months and perhaps the first few years of our practice. I can remember very well in my first three or four months of practice in the City of Toronto, I wondered as I paid my monthly rent, just how I was going to get hold of the other \$30 or \$40 to pay the rent at the end of the next month. That perhaps was natural with a man who had some Scotch blood in his veins. But there is one fundamental law—and may I put it this way: that if a young man goes into a town to establish himself in practice, or if an older man transfers himself to another town, that he may realize upon to carry him over the first year of difficulty. And, Gentlemen, that is the danger period with our young men. The question comes to everyone—and you can quite appreciate it: How am I going to make myself known to this locality? How am I going to establish myself in reputation and as a person, as an individual, in this community without indulging in what is known as commercial publicity? And if a young man can get over that period of one or two years, I always think he is getting over at least the most dangerous period of his profession or career.



But I think this: if a young man will remember that he is going into that locality, in the first place as dentist; in the second place, as a citizen. And those two make up his entire vocation, and that he is called to that town or that city not only to be a dentist but to be a citizen; that is, he is proficient in his calling, he is discharging his duties as a dentist faithfully, honestly and well and he is also discharging his duties as a citizen, taking an immediate interest in all the educational, the social and moral interests of that community. I venture to say this, Gentlemen, that he will succeed in establishing himself in the good graces and in the good will of that community, and that he will become known as a good dentist and as a good citizen and as a good all-around man who is going to be a valuable asset to that community quicker and better than he can possibly be by any kind of commercial advertising. That is the summing up of what I want to say. May I put it in this other way, and I put it in this way as a last word with my apologies to the Good Book, and I am giving it to the younger men, particularly:

"Seek ye first the good of the patient and the good of your community and all these other things shall be added unto ye."

Dr. Gallie, in replying to the discussion said he wished merely to compliment the Association on their presiding officer, saying he had never attended a Dental meeting presided over by a more efficient officer than Dr. Conboy.



## Nitrous Oxid-Oxygen Analgesia in Dental Cavity Preparation\*

*By S. G. McCaughey, D.D.S., Ottawa, Canada.*

I once heard a story which amused me, but the significance of which was somewhat obscured until I received a letter from your secretary, Dr. H. J. Shields, asking me to present a paper on "Nitrous Oxid-Oxygen Analgesia for Cavity Preparation," at this meeting. He also stated in his letter that my name and the subject had been suggested to him by Dr. F. H. McMechan, Secretary General of the Associated Anesthetists of the United States and Canada. During some previous correspondence with Dr. McMechan I had mentioned that I used nitrous oxid-oxygen analgesia a great deal for cavity preparations.

The story was this: A negro parson was having trouble with his flock and one day on the street he was upbraided by Sambo, who complained that the parson had no power in his preaching. The parson rather resourcefully suggested that if Sambo knew so much about how preaching should be done he should take the pulpit the next Sunday morning. Sambo felt that he couldn't back down, so he accepted the challenge.

Next Sunday morning, Sambo appeared in the pulpit much chastened in spirit and very shaky in the knees and commenced: "Bredren and Sistern, we will take our text this morning from that well-known passage in the book of Jonah where Jonah says to the whale, 'Whale, if you'd kept your fool mouth shut ah wouldn't be here.' "

I appreciate the opportunity to present before you a paper on "Nitrous Oxid-Oxygen Analgesia for Cavity Preparation," a subject in which I am very much interested. Now, while this of necessity must be a paper involving mostly dental problems yet I hope that enough common ground will be found exposed to make it of some interest, at least, to medical anesthetists as well.

Also I feel it a privilege to be another link in the chain of fraternalism and co-operation, which is drawing these two great branches of the healing art more closely together; a co-operation which is the result of the now definitely established knowledge of the interdependence of these two professions.

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\* Read during the Fourth Annual Meeting of the Canadian Society of Anesthetists with the Canadian Medical Association, Ottawa, June 17-20, 1924.



*The Psychological Problem*

Our patients, as a rule, come to us in a very agitated state of mind. The fear of dentistry is wide-spread. It is implanted in the young mind and so often fixed there by the garrulous parents or friends, whose desire for sympathy or admiration, in the pose of hero or martyr, leads them to tell with great exaggeration about the "tortures" they have just endured in the dental chair. When patients come to us in this state of mind the problem of the induction of analgesia becomes largely a psychological one.

It has been said that analgesia for dentistry is much the same as analgesia for painless childbirth, but the psychological aspect is different.

The mental attitude of the subject for dentistry, who can wait another day of his own free will, differs from that of an expectant mother, who, when the hour arrives, cannot delay. She is in the grip of an immutable process of nature and her realization of this fact usually makes her a willing and receptive subject for analgesia.

In the subject for analgesia in dentistry however, this state of mind must be produced by some other means.

There must be such a calm, unostentatious, genial assurance diffused in the demeanour of the anesthetist operator, in the tactfulness of his approach to, and explanation of the subject to the uninitiated, such a ready sympathy with his fears, notwithstanding a steadfastness of purpose during it all; even in the quiet orderliness in the deportment of the nurse or assistant in attendance, that the very atmosphere is permeated with this genial confidence, which, at first results on the part of the patient in unconscious confidence in the surety of the method and in the ability of the operator, that his will becomes plastic and then submissive to the present master of the situation.

This psychological problem is simply the production of peace of mind in the patient during the preliminaries for the administration of the gases, by such means as may be deemed expedient for the type of patient presenting—means best decided on at the time by the anesthetist who must be able to "size up" his patient through his thorough study and knowledge of human nature.

It is simply the application to this dental procedure of the principle of anocithesia advocated by Dr. G. W. Crile, of Cleveland, for general anesthesia and surgical operations, and

means the doing away with harmful or noxious associations in the patient during the operation. 1. "It is accomplished for surgery," to quote the late Dr. Parsons, of Denver, Colo., "by having the patient in a tranquil frame of mind before the operation, by the preliminary use of narcotics, by peripheral nerve blocking and small amounts of ether, if necessary."

Dr. Crile says, 2 "Anoci-Association may further be promoted by the use of pleasant nitrous oxid instead of irritating, suffocating ether, provided only that the anesthetist is an expert in the use of this anesthetic."

This principle of anocithesia may be applied to analgesia in dentistry psychologically by mental control and suggestion. Only on rare occasions in certain types is the use of a synergist necessary or advisable.

This brings us to the consideration of types. Dr. A. E. Smith, 3 of Los Angeles, has divided them into—"Alcoholic and Drug Addicts, Nervous or Excitable, Susceptible and Non-susceptible." To these I would add the "Stubborn and Suspicious or Cynical Types"—possibly both sub-divisions of the nervous type and the last, which, for want of a better term, I shall call the "Ideal Type," with modifications and combinations of all the aforesaid types.

#### *Points of Procedure Applicable to All Types*

There are some points of procedure applicable to all: An examination of the mouth having been made and a decision arrived at as to what operative procedure is necessary, the marked chart is placed on the operating table in full view of the dentist and his assistant. Analgesia is then, or has been previously, explained to the patient, (I am assuming all through the paper that the patient is experiencing analgesia for the first time), impressing upon the patient that he can best receive and aid the analgesia by his willing submission to all procedures and instructions during the administrations; explaining that there is little or no odor to the gases, that the first intimation he will have of the gases' effects will perhaps be a slight drowsiness followed in some cases by a slight tingling in the hands and feet, that while he will feel no pain, he will be conscious of all that goes on, that he can speak if he so desires, that he may feel pressure, be conscious of heat and cold and that he may or may not see.

While this explanation is taking place the inhaler may be put in position and all valves being open the gases are turned



on slowly till they are on full; the air valve may then be closed and when the patient begins to show signs of analgesia, the re-breathing valve, except in the case of the susceptible type, is closed.

In a few seconds, the patient is instructed to open the mouth and the operating is begun on non-sensitive areas and continued there, until the state of complete confidence, attained by this suggestion of operating without pain, is reached, and satisfactory analgesia is obtained; from which time the differentiation of technique for the maintenance of analgesia and preparation of cavities is dictated by the type of patient with which one is dealing.

*The alcoholic or drug addict* gives more or less trouble with any anesthetic, but so long as he is kept definitely in the first or analgesia stage the behavior is good; therefore the greatest care to keep the proper mixture of gases is necessary.

*The nervous or excitable individual* is a most difficult type with which to deal. The psychological factor must be emphasized and the confidence of the patient must be won, (it may be possible to neglect this factor for an anesthesia, but not so with analgesia). Suggestion plays a most important part and one must use such means to overcome his fear by taking his mind off the work at hand as one's judgment prompts.

It has proved successful to proceed quietly as if no fear or question were in the patient's mind and when the preparations are complete, ask the patient to cease talking and submit quietly, then commence the induction.

Too rapid induction increases the nervousness, so the induction for this type should be slow and the commencement of the cavity preparations should always be on non-sensitive areas.

It is unwise in these two types to attempt too lengthy an administration the first time, because in the alcoholic it is so difficult to maintain just the proper stage, neither too light nor too deep, that the strain upon the dentist, who is not only anesthetist but operator as well, is quite intense, and in the nervous there is sometimes a tendency to nausea in too prolonged analgesia.

It is a gratifying fact that one successful analgesia with the nervous type generally produces such confidence that the type is changed from the nervous to another type, because rarely is a type pure but usually predominately one type with elements of other types in combination.

Pre-analgesic administration of sedatives is occasionally of benefit.

*The suspicious and stubborn types* are usually associated with the nervous and can also be changed in type.

With these types, the great factor of control is again the psychological. In the suspicious, if the confidence and mental quiet of the patient be not obtained, it is most difficult to maintain that thread-like line of analgesia, which marks the state between exaggerated consciousness and the second or excitable stage of anesthesia.

*The stubborn individual* is one who taxes greatly the patience, the intuition, and the resourcefulness of the anesthetist. He wants analgesia and he won't submit. This is a case in which the so-called "standardized technique" may be entirely discarded in favor of mental control and suggestion.

It is sometimes a most successful move when one encounters opposition to analgesia with this type, to start, without analgesia, operating upon the most sensitive area presenting. One twinge of the pain experienced, particularly in gingival cavities, is generally more effective than many words and produces a willingness which makes a most delightfully co-operative patient.

*In the susceptible type* we have an easy administration with this one exception, that we must be careful to keep such a proper mixture of the gases as to prevent the patient from becoming anesthetized as the operation proceeds. It is sometimes necessary to cut down the nitrous oxid to 75 per cent. and raise the oxygen percentage accordingly.

*In the non-susceptible*, who is not so readily affected by the gases, the oxygen content must be reduced to 10 or 12 per cent. while the nitrous oxid is forced and rebreathing always used.

In fact in all types, except the susceptible, I believe the best results are to be obtained by *rebreathing*, while we are operating in the open mouth, because we produce more positive pressure off-setting to some extent the syphoning of air from the open mouth. It also, according to Dr. Chas. K. Teter, produces in the bag from 4 to 8½ per cent. carbon dioxid, thus obtaining from the patient himself a supply of carbon dioxid, which being given back to him replenishes the acapnial deficiency of carbon dioxid in the body, produced by the excitement or fear present in practically every subject for dental operations.



Thus it becomes evident that the physiological objection sometimes taken to nitrous oxid-oxygen anesthesia, that it raises the blood pressure by producing acapnia is eliminated.

This phase, which is really not included in the scope of this paper, I will not attempt to discuss.

*It suffices to mention that rebreathing does result in better, more even, and more easily maintained analgesia.*

Mouth breathers compel a modification of induction and maintenance in all types to suit the individual case.

It is much more difficult to administer nitrous oxid-oxygen for a dental operation than any other, because the mouth is open and we have to contend with atmospheric pressure of fifteen pounds to the square inch.

*The ideal type* is described by Webster as "that which is accepted as a standard of excellence," and to be described as such a patient should be both physiologically and psychologically so.

I may perhaps best describe this by citing a concrete case.

*Illustrating Case*—A young lady, twenty-three years of age, a graduate of arts and a student of psychology, proved to be an ideal patient. I told her she was and asked her why she thought it was so. She answered—"I wanted analgesia, I was perfectly willing to accept all the conditions; I had confidence in the agents and in the administrator and from my experiences with a former administration realized that my submission and co-operation were necessary aids to you." To this we may add that she is physically a splendid type, possesses a quiet placid disposition and is extremely intelligent. Her pulse and heart rates were normal throughout. If all patients were of such an ideal type, technique might easily be standardized.

### *Guiding Signs and Symptoms*

*Reflexes:* I have found it very difficult to formulate any definite rules as to the reflexes which tell us when to commence operating. The corneal reflexes are all present. The only definite symptoms are that the patient seems to relax and become drowsy, his speech is somewhat thickened, and either very deliberate or sketchy, as of one in stupor. If a stop-watch is used, it will be found that in the average case induction will be far enough advanced in about one minute to commence the routine I have outlined. With experience gauging the onset of analgesia becomes largely a matter of intuition.

*Shock*: If induction be properly carried out, with the pre-analgesia mental control established, the incidence of shock is negligible. The only shock I have ever seen is one of fatigue in the nervous patient and in support of my claim that the attainment of mental contentment is vital to successful analgesia, let me confess that the most pronounced cases of fatigue have been in my own personal friends. I once had a very dear but apprehensive aunt faint during the analgesia, due I am sure, to my failure to overcome her dread of the whole procedure. She knew my limitations better than other patients, and promptly recovered upon the administration of pure oxygen, and the preparations were then completed uneventfully. The fatigue of my personal friends was due, no doubt, to the same psychological factor, the lack of complete confidence although in a lesser degree.

#### *Scope for Dental Operation*

While analgesia is one of the greatest blessings, it is not necessary in all cases and should not be overworked. There are certain preparations, *for instance*, that for a porcelain jacket crown demanding such an exact technique, at, and under, the gum margin that it is unwise to attempt the complete preparation under analgesia, largely due to the nose-piece being in the way. However, the most painful portions may be done under analgesia and the gum margins under infiltration.

It also must be pointed out that it is only necessary to do, under analgesia, such portions of the preparation as will be painful. The sterilization of the cavity, adjustment of rubber dam, polishing the enamel margins, etc., may all be done painlessly without analgesia.

*Analgesia is indicated*: (1) Where intense or prolonged pain is expected. (2) Where a number of cavities present, the preparation of which will be a distinct shock to the nervous system of the patient. (3) Where it is desired to complete the work as speedily as possible, as for instance in the extremely apprehensive patient to whom one visit to the dentist is a purgatory in anticipation and each succeeding visit worse, thus producing a distinct dental shock.

*Contra-indications* for the use of analgesia in dentistry may be taken as the opposite of the above. In so far as the physical condition of the patient is concerned the contra-indications are few.



*Advantages:* The great advantages of analgesia for cavity preparation are obviating dental shock and eliminating the fear of the dental engine; and the experience is generally so pleasant, that instead of the patient looking forward with dread to approaching visits to the dentist, the anticipation is one of equanimity.

*Disadvantages:* There are some disadvantages, among which may be mentioned: (1) It is always necessary to have an assistant or dental nurse in attendance. (2) The patient can give less co-operation than without it, but this is largely compensated by the absence of recoil from pain in the patient with a consequent interruption of work. (3) It is also more difficult to operate with the nose-piece in place, especially if operating on labio-gingival cavities in the maxillary anterior teeth.

*Sensations:* The sensations incident to analgesia are peculiarly their own. The patient, in the majority of cases, seems to be travelling to remote places, he passes into a state of languor and "complete physical well being accompanied by a sense of the insignificance of worry or anxiety."

It appears to detach the mind of the patient from himself, and it makes him, as it were, an observer only of specific anxieties. He seems to "come back" to consciousness as if returning from a long and pleasant journey.

At times distractions such as sudden loud noises, the ringing of the telephone or remarks made in the room unrelated to the case in hand seems to recall the patient powerfully to a state of exaggerated consciousness of his surroundings and these should be avoided.

### *Essentials for Success*

There are some necessities for success: (1) A proper machine and a nose-piece which does not intrude too greatly on the field of operation. (2) Familiarity with the minute regulations of the mechanical appliance. (3) Familiarity with the fundamental principles of producing analgesia. (4) Knowledge as to how to introduce "analgesia" to new patients and ability to obtain their complete confidence. (5) A knowledge of "suggestive therapeutics." (6) And a most intimate knowledge of the minute dental anatomy.

Nitrous oxid-oxygen analgesia for cavity preparation ought to be, in its sphere, as great a boon to humanity as is general analgesia in surgery, because, while its field is limited

to a branch of a specialty, it is daily applicable to a greater number. It presents difficulties but its advantages make it wholly worth while.

It requires a definite study as a subject separate from, yet related to, general analgesia. It is not a subject which may be summed up in so many rules and regulations, because 6 "no apparatus" has yet been developed, nor can it be devised, which is absolutely automatic or fool-proof, nor can it be set to suit all cases. Due to idiosyncrasies and variations in apparently exactly similar human machines. Every patient is a law unto himself. He may approximate certain standards and rules by averages sufficiently for these standards to be used as guide-posts, but the judgment of the anesthetist must be the "decisive factor" of the complete administration.

### *Case Reports*

I am appending a number of case reports, the last ten presenting prior to writing this paper, taken in order as they came:

*Case 1:* A girl, aged 16 years, nervous and susceptible; under treatment for goiter. Induction 80 seconds; very even; uneventful; color unchanged; strong heart; preparation four simple anterior cavities during 4½ minutes; no change in pulse or breath rate; recovery immediate; no pain; no after-effects whatever.

*Case 2:* Child aged 10 years, nervous, susceptible. Induction 1 minute; preparation 5 cavities during 7½ minutes; pulse 82; breathing 23 throughout; recovery immediate; no pain; no after-effects.

*Case 3:* Married woman aged 39 years, extremely hysterical person. Induction 1 minute; maintenance 5 minutes for 5 small cavities. No movement but talkative throughout; no pain; recovery 45 seconds.

*Case 4:* Widow, age about 50 years, extremely nervous. Induction 2 minutes, complained it was affecting her heart, but upon being assured that her heart was all right, went quietly into analgesia. Pulse 80, breathing normal; prepared two cavities in four minutes; so sensitive that she could not stand the pressure of her finger nails on them. Recovery slower than usual (2½ minutes) but very gradual and normal. Pulse on completion 70; put in temporary fillings and treatment after 5 minutes rest. Left the office in twenty minutes from her entry.



*Case 5:* Girl, aged 11 years, highly nervous child, nervous mannerism of picking at her arms until they bleed. Induction 60 seconds, for eight simple cavities in anterior interproximal spaces. In one minute afterwards she was talking to me, analgesia absolutely even and uneventful.

*Case 6:* Married woman, aged 35 years, placid, susceptible, her second analgesia. Induction 60 seconds; preparation of two cavities in 5 minutes with further induction to anesthesia; during first thirty seconds patient was somewhat noisy due to my having allowed her to get into the excitement stage of anesthesia. During the last of the cavity preparations, she realized by the cessation of the preparations that some change of procedure was taking place and knowing that some teeth were to be extracted became apprehensive that the extraction might start before she was completely anesthetized. Deep anesthesia in 60 seconds. Extracted second molar and impacted third molar in five minutes. After 10 minutes rest the cavities were filled and she left the office in three-quarters hour from entry.

*Case 7:* Nurse, spinster, aged about 45 years, stout, neurotic and impatient. Had been in discomfort for some days and was very fatigued. Induction 80 seconds; preparation for 5 simple cavities during 6 minutes; pulse and breathing became normal at completion of induction and remained so. Recovery splendid; no after-effects; resumed work on the restorations in 3 minutes.

*Case 8:* Married woman, aged 33 years, susceptible, nervous, but well-controlled. Pulse before starting 102. Induction very slow (2 minutes), pulse at end of induction 90; breath rate 24; analgesia for 10 minutes, preparation for 3 cavities. Pulse on completion 82. Recovery excellent in 60 seconds. Put in temporary fillings after 5 minutes, felt very fatigued. Left office after resting for one hour during which time she slept. A personal friend. (Notice the fatigue.)

*Case 9:* Bride, aged 22 years, extremely nervous. Induction 2 minutes; pulse 80; breath rate 22; preparation for inlay 10 minutes. Recovery splendid in 1½ minutes. Second induction four days later. Induction 2 minutes; pulse 80; breath rate 26 and deep; preparation for inlay 12 minutes. Recovery in 1½ minutes; pulse and breathing normal. No after-effects.

*Case 10:* Married woman, aged 30 years, ideal type psychologically, non-susceptible physiologically; used 12 per cent.

oxygen and 88 per cent. nitrous acid. Induction 1 minute. Analgesia for 6 minutes, some laughter, patient is happy-go-lucky, always laughing. Recovery O. K. in 45 seconds. Left office with temporary fillings in place after 10 minutes.

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## **Fleeting Glimpses of a Trip to the Canadian Dental Association**

*Pearl Bartindale, D.N.*

It was a very eager and expectant group of twenty-five people that gathered at the depot to leave Toronto on the ten o'clock Canadian National train July 24th of the Summer just past to attend the Canadian Dental Association Convention. Despite the heat it was not long before the congenial party was well acquainted and chatting merrily of the wonderful trip ahead of them across the Continent to Vancouver. Between Toronto and Sarnia several others joined the party, making a total of thirty by the time the Steamer "Huron" was reached.

What a glorious change from train to boat, and as we glided out of Sarnia on that stately steamboat the "Huron" it was not long until all the heat and discomforts of the morning were forgotten as well as all worries, whether great or small. All night we sailed up the Great Lakes, and early next morning came into the beautiful St. Mary's River. A few hours later we moored at Sault Ste. Marie, the interesting place of many huge locks and the many steamers and freighters plying their way up and down the Great Lakes.

It was at the Soo that we were given our first opportunity to do a little sight-seeing. Both the Canadian and American sides are great industrial centres, one of the largest steel plants on the Continent being located at the Canadian Soo, as well as a large paper plant. During this tour a pile of pulp valued at four million dollars was pointed out to us. Oh! how we opened our eyes at the sight. In the course of our drive we were shown the original lock for canoes, which looked like a good sized bath tub and later on we passed through one of the wonders of the world, the famous "Soo Locks" into the inky waters of Lake Superior.

Thunder Bay, the next morning, was a magnificent sight with the rising sun shining on the "Sleeping Giant" and it was not long before Canada's twin Cities came into view, much to our regret, as we were sorry to leave the boat after such a delightful trip. However, at Port Arthur special cars were awaiting our party and our comforts were well looked after by the Canadian National representatives.

Arriving at Winnipeg on the evening of the same day, we had a stop of forty minutes, just long enough to have a short walk along Portage Ave.,



where we noticed especially the consideration given pedestrians by motorists. Back in the depot again we met a crowd of Boy Scouts returning from Camp, looking well and happy. Here one more member was added to our party.

The following day at noon we arrived at Saskatoon, our train of sixteen cars being one of the longest ever going into this City. We were pleasantly entertained by the local Dentists and friends and leaving shortly after six with more members in our party we spent a very enjoyable evening with the radio and a sing-song in our observation car.

The Edmonton Dentists and their wives turned a wet day into one of our brightest days, as the morning spent there was very interesting. We were shown through the University, the Parliament Buildings and the McDonald Hotel. Coming back to the diner we found that the ladies had decorated our tables with beautiful flowers and arranged with our Chef that we would be the guests of the Edmonton Dental Society for luncheon.

Going West the country became more rolling and the timber larger, while the altitude persistently increased. As we sped along the banks of the Athabaska River the blue outline of the Rockies gradually loomed in the distance. Very soon we were in close touch with the marvelous ranges of mountains which stretch for approximately four hundred miles towards the Pacific Ocean.

In the evening we arrived at Jasper Park Station where our cars were parked on the siding. The following morning we had the pleasure of being entertained by Colonel Rodgers, Superintendent of the Park, and his charming wife, at their beautiful Lodge which contains a very rare collection of curios and gems of art. Motors called for us at the Station and the drive along the U-shaped roads up the mountains was wonderful and thrilling. Mount Edith Cavell is of striking beauty, from its rugged base to the crown of glistening snow at the peak, 11,033 feet above the sea. The foot of the mountain is covered with rosy hued heather and uncountable varied colored flowers of the wild. After luncheon at the Main Lodge we motored to Maligne Canyon, which is a picture of amazing beauty with the ice fields and a hundred snow capped mountains, most of them unnamed.

Back at our Lodge one of the Canadian National splendid dinners was enjoyed by all after our day in the great open. Our evening here was a very busy one. We visited the bears, had a talk on the history of Jasper Park by Colonel Rodgers, took in a movie, were entertained by a most interesting old gentleman at the boat house, where he planted a bouquet in our memory in his sunken garden, and last but not least, danced in the pavilion over the boathouse.

The next morning we saw the town of Jasper Park and about 10.30 a.m. left the station with several more added to our party including a bride and groom going to Vancouver on their wedding trip. Needless to say, that evening they were well entertained in the Observation Car. They, however, were good sports and the groom made a neat little speech. Our evenings in the Observation Car were most enjoyable and a more congenial or happy crowd could not be imagined.

Mount Robson is the highest peak in the Canadian Rockies, being 13,068 feet above the sea level. The view presented to the tourists from the Railway Observation platform, where we stopped ten minutes, is nothing short of awe inspiring. The day was exceptionally clear and we were

fortunate enough to see the Alpine Climbers on the upward climb. Words can convey very little idea of the magnificence of Mount Robson.

The magnificent scenery, the panorama for some miles from the Canadian National line surpasses anything we had ever seen. Mount Robson is in full view for several miles, and appeared to rise higher and higher as we proceeded. In all directions are snow capped mountains and the scenery all along the river is wonderful. We saw acres of fire weed which was most brilliant. At Bulkley Canyon is to be seen the famous Bulkley Gate. This "Gate" is one of nature's phenomena, which to be seen is not to be forgotten.

Leaving Jasper the clouds were low, but gradually cleared and a more perfect day could not be imagined.

The scenery round Rainbow Lake cannot be surpassed. Mount Fitz William stood out like a sentinel, the farther we went along the higher it seemed till at last it was lost in the distance. Rainbow Lake is almost surrounded by mountains and is a perfect picture.

Leaving out the scenic effects our interest centred on the Indians. No traveller can make the trip along the Skeena River without being filled with enthusiasm at the Indian Village of Kitwanga. The train stops long enough to allow the tourists to visit the wonderful collection of native totem poles and the quaint Indian graves to be found there.

As the train nears Prince Rupert evidence of the activities in connection with the salmon canning industry becomes increasingly pronounced. Prince Rupert is situated on Keren Island, fronts on a fine natural harbor, is the chief shipping port of the North Pacific Coast fisheries and possesses one of the largest cold storage plants in the world. Some of our party had the (cold) privilege of going through this plant. After a walk around town and a climb to the reservoir, we had a splendid view and could appreciate what wonders had been accomplished to make such beautiful flowers and an interesting place of muskeg and rocks.

Leaving on the steamer "Prince Rupert" we took the Inside Passage, which has been aptly termed the "Norway of Canada." Seldom exceeding a mile or two in width its surface was as smooth as glass. The only exception was the crossing of the Queen Charlotte Sound where it was a little rough and a few of our party did *not* go down for dinner. For seascapes, land and mountain scenery in combination, there is no other spot in the wide world that can provide so rich a treat. On our way down we visited Ocean Falls and Powell River, where two of the largest paper mills of the world are located.

Before reaching Vancouver we noticed Siwash Rock resting in the water on the shore of Stanley Park where Pauline Johnston, the Indian poetess was buried. In the evening, in company with some of the Vancouver Dentists, we had a dinner party at the Grosvenor Hotel and a silver wrist watch was presented to Dr. C. A. Kennedy for his kindness and consideration in arranging the trip to Vancouver. Sunday morning some went to Church and some played golf. In the afternoon most of the party were motored around Vancouver through Stanley Park and the other places of interest. Monday morning the convention opened and in the afternoon some of us had the pleasure of being shown through the "Empress of Canada" where we saw one of the largest shipments of silks that ever came into Vancouver. In the evening we went by a chartered boat to Bowen Island where we had a well arranged supper and a good dance. On Tuesday



the ladies were driven to the famous Capilano Canyon for lunch. Wednesday evening was the supper dance at the Vancouver Hotel. Thursday the ladies were the guests of the Ash-Temple Company. They were taken by boat twenty miles from Vancouver to the head of the North Arm of the Burrard Inlet to Wigwam Inn for a chicken dinner. The Inn is built in rustic style and nestles on the water's edge, one of nature's most charming beauty spots. On Friday some of our party went to Victoria where they visited the Butchart Gardens, a remarkably charming spot, and the Astrophysical Observatory, which is equipped with one of the largest telescopes in the world. We then motored along the many scenic drive-ways of the city. Leaving Saturday afternoon we went on the steamship "Princess Charlotte" to Seattle, where we spent Sunday, leaving in the evening for Portland. From Portland we motored along the scenic Columbia Highway for one hundred and forty miles to Mount Hood, stopping for lunch at the Tyrell Tavern, where we had a wonderful fish and chicken dinner. Leaving Portland at noon on Tuesday we returned to Seattle and spent a few days viewing the city. From there we went by boat to Vancouver where we started on our return trip.

Leaving Vancouver Sunday morning, August 15th, fourteen of us had a wonderful trip along the Fraser and Thompson Rivers, where the scenery is grand. From Revelstoke we went South to Arrowhead, where we parked our car and had a delightful trip on the Steamer "Bonnington" down the Arrowhead Lakes to Robson and back to Arrowhead again. Then at Revelstoke we had a mountain climb and a picnic at the top, beautiful sunset and excellent scenery completed a day never to be forgotten.

Revelstoke to Glacier has the steep Western slope of the Selkirk Range, with its magnificent peaks and impressive mountain scenery. Glacier is the centre of some of the finest mountaineering country of North America.

Everything combines to make the scenery between Glacier and Field a climax of mountain grandeur. Not only is the scenery impressive, but the engineering feats are particularly remarkable, especially in the construction of bridges and tunnels. Sitting in the open observation car, which was put on for us from Revelstoke to Field, we were spell-bound and loath to leave even to dine, for fear of missing any of the beautiful scenery. Past Field we went through the Spiral Tunnel, which is most interesting, and on past the Great Divide.

Arriving at Lake Louise Station at night our car was parked on the siding and in the morning bright and early we all went up to the Chateau for breakfast, where we had our first view of the beautiful Lake Louise. Later, we motored from there to the lovely mountain Lake Maraine, in the valley of the Ten Peaks, nine miles from the Chateau, through Paradise Valley carpeted with Alpine flowers. It is difficult to imagine anything more fascinating than in half an hour's time to step from a luxurious hotel into the primitive glory of cliff and crag, winding waterways and frozen grandeur. This was our experience and we spent part of that day close to the very heart of nature, climbing the mountains and enjoying the scenery. The trail to the lakes in the clouds rises gradually through spruce and fir forests to Mirror Lake, thence upward to Lake Agnes. The view from a charming little teahouse is indescribable.

Banff was our next stop and had Banff not become famous for its beauty, it would have surely become famous for its hot springs. Here we had excellent bathing and delightful drives and walks and last, but not least, perfect dancing in the evenings at the Banff Springs Hotel.

It is impossible for an ordinary human being to describe the scenery along this Banff trip made up of snowy peaks, glaciers, ragged precipices, waterfalls, foaming torrents, canyons, lakes like vast sapphires and amethysts set in the pine clad mountains.

Leaving Banff we gradually passed through the foot hills on to Calgary, where a jolly bunch of dentists and their wives met and entertained us for the half day spent there, by motoring us all around their very beautiful city.

At Moose Jaw the local dentists were right on the spot and not one minute was wasted of the forty minutes we had there.

Regina was our next stop, but only for ten minutes. Again we had a jolly time with the dentists who were good enough to meet our train.

At Winnipeg we were entertained, some indulging in a little golf and others less active driving around the City. After a very enjoyable dinner party given by the Winnipeg Dental Society we left on the 9 p.m. train for the boat.

At Fort William the next day, we boarded the steamer "Assiniboia" coming down the Great Lakes to Port McNichol, then to Toronto.

Dr. Lorne McLachlan, Ottawa, is indeed to be congratulated for his wonderful arrangements for the return trip.

Everyone taking in the Dental Convention trip this year were agreed that never before had such a congenial party set out. There was an infectious air of friendliness and good fellowship throughout the entire trip, which helped along with the many other good things to make it most enjoyable and beneficial.

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## A Review of the Present Status of Dental Practice

*Thomas Cowling, B.A., D.D.S., Royal College Dental Surgeons, Toronto.*

*(Concluded from the October issue.)*

### THE OUTLOOK.

The key to the future of dentistry may be found in the records of the past and the outlook is very promising. True, there are many problems confronting us, but these will be faced fearlessly and their solutions sought after diligently.

The outstanding need in dentistry is for men of broad education. Some think that our educational programme should be directed by the University; others, that it is best to arrange our own courses and acquire help as needed, from the University, without actual affiliation.

To some the solution of our educational problems, seems to rest in an alliance with Medicine. It is a fact, however, that Dentistry has already had such an experience and found separation advisable. The first dental colleges were organized because the medical schools would not recognize the needs of Dentistry.



Whether we make an alliance with the University, or Medicine, or remain as we now are we must ever have uppermost in our minds the necessity of developing the type of dentist to meet the newer demands. Our teachers must work with the firm determination that, in things educational, there is no substitute for honesty. The curriculum must include only those subjects that have a true bearing on dentistry, and every subject listed must be taught, and taught well.

We have been graduating dentists who appreciate, no doubt, the results obtained by scientific methods, but who themselves lack the discipline of scientific training. The effect of this is reflected in much of the research work that has been done. This is exceedingly unfortunate. True research can only be done by minds thoroughly trained in the basic sciences.

There is some measure of truth in the statement that dentistry has not always been on a very sound basis when considered from the standpoint of a practical knowledge of bacteriology, histology and pathology. We have been concerned too much about the superstructure or, let us say, the architecture of our restorations and too little about foundations thereof. Root-canal work, generally, has not been very successful. Crown and Bridge work has in many cases caused the destruction of the teeth upon which the restorations were supported, and the same may be said of many partial dentures.

The teaching problem in our colleges is a very serious one and is not being given the attention that its importance deserves. Experience has shown that Dentistry must produce its own teachers, yet dentists are rarely equipped for teaching or for research work. It is a fact that those who have received training in the sciences seldom look favorably upon a position on the teaching staff of a dental college. So there is the necessity of importing teachers, many of whom give evidence of being too theoretical and not sufficiently practical, hence the teaching is not effective. Others not being dentists, have not a sympathetic view of dental problems. A good teacher combines wide learning, broad sympathy and a balanced judgment. Such men may be hard to find, but Dentistry must find them if real progress is to be made.

There are many important problems awaiting solution. Since the focal infection theory was introduced we have not had a clear statement as to the disposition of the pulpless tooth, nor have we had an accurate account of the changes in structure, that a tooth undergoes when the pulp is removed.

There are also the problems of ionic medication of root-canals; pressure anaesthesia; and the true nature of saliva. The questions concerning the acidity or alkalinity of dentifrices; the effect of various mouth washers on saliva and tissues; the relationship between the decalcification of the teeth and the nutrition; and a host of others of equal importance still remain unsolved.

These are but a few of the questions awaiting solutions; the list is being added to continuously. It is inconceivable that the solutions to them will come from any one mind. We all must share the burden. As Theodore Roosevelt said:

“Every man owes some of his time to the upbuilding of the profession or business to which he belongs.”

If we cannot all take an active part as research workers, we can at least show sympathetic support of those who do. This does not mean the acceptance of every untried theory. Dentistry has already suffered too much from this form of support. On the contrary, we should, at all times, insist upon careful scientific research and ourselves cultivate the habit of critical analysis of every new theory before accepting it. He is acting wisely in regard to innovations in dentistry who follows the advice of the old adage:

“Be not the first by whom the new is tried, nor yet the last to cast the old aside.”

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## The Canadian Dental Association

*G. K. Thompson, D.D.S., Halifax.*

The meeting of the Canadian Dental Association, August 4th to the 9th in Vancouver, was certainly successful from every standpoint, and “Billy” Bruce and his British Columbia Confreres deserve the congratulations and thanks of the entire profession particularly all those who had the good fortune to be present at the various Clinics and meetings.

The Clinics and Addresses were all of a high order and indicated that the members of the profession of Western Canada and United States are practicing Modern Dentistry in every sense of the word. The address of the retiring President, Dr. S. W. Bradley, contained some excellent suggestions for action on the part of the Association. Two matters of outstanding importance discussed at the meeting were Public Health Dentistry and Dental Education and Legislation. The matter of Dental Service for the public was fully dealt with in the report of the Secretary of the Oral Hygiene Committee. The publishing of the pamphlet “How to build sound teeth” by the Department of Public Health being considered a most important feature of the National Preventive Dentistry Campaign. It is hoped that the various Hygiene Committees throughout Canada will



avail themselves of this pamphlet which can be obtained by applying to the Deputy Minister of Department of Public Health, Ottawa. Ask for number 30 Public Health Pamphlet.

It is suggested that a National Distribution would greatly facilitate the establishment of Pre-school Age Dental Clinics, in the Hospitals and Health Centres and thus provide the public with real Preventive Dental Service.

In the matter of Dental Education and Legislation representatives of the Canadian Dental Association and the Dominion Dental Council and Dental Schools held conferences, which it is expected will eventually result in the adoption of standards which will be acceptable to all the Provinces and Dental Colleges. The action of the British Columbia members of the profession in putting on such a good meeting has revived the Canadian Dental Association and should result in greater co-operation between East and West and their enthusiasm should be an example for the men in the Maritime Provinces who are to have the honor and responsibility of preparing a programme for the next biennial meeting in 1926 to be held in Halifax, Nova Scotia.

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## SELECTIONS

### **Crowns and Bridges from the Medical Point of View**

The Place of Crowns and Bridge-work in Modern Dentistry forms the title of a leading article which appears in the "Lancet," August 6, 1924. It does not require, says the writer, a very long professional life to have witnessed the gradual evolution of crowns and bridges to their highest point of technical achievement and their decline in popularity to the present time, when so many regard them with disfavor.

A comprehensive survey of the factors which have brought about this change is made. A generation ago the local hygiene of the mouth was not considered a matter of much importance, and the alteration of this view has been in part coincident with the decline in favor of crown and bridge-work.

The writer of the article, while condemning crowns of the collar variety, maintains that there is still a wide field of usefulness for crowns. "There has been," he says, "so general a condemnation of crowns by doctors that it is well to make it clear that properly constructed, and in suitable conditions, a crown may be a perfectly scientific and hygienic method of conserving teeth. Any type of crown, however, which involves a collar fitting over the root and extending below the gum margin is, in the opinion of most dentists, a form of conservative dentistry which leads to dental sepsis and should be discarded."

The case against bridge-work is put strongly, although a limited sphere of utility is allowed to the removable bridge, not however to an extent which seriously qualifies the general distrust of bridge-work as a clean method of tooth restoration. Finally attention is drawn to apical infection, of which so much has been heard since the advent of the X-ray. There is no evidence, states the writer, to show that teeth which have been crowned are more frequently the seat of an apical lesion than pulpless teeth which have been filled. The presence of apical infection in some teeth which have been treated is a wholesome challenge to the dentist, for it raises the

question as to whether dental technique is sufficiently thorough and scientific to exclude infection from devitalized teeth. The dental profession is fully alive to the gravity of this issue. Already the interest aroused has resulted in a notable improvement in root canal technique which warrants the belief that in the near future infection will be eliminated with certainty in the treatment of diseased pulps.—*British Journal of Dental Science*.

## The Use of Potassium Bicarbonate in Treatment of Vincent's Stomatitis

Captain Clarence W. Johnson, writing in the *Military Dental Journal*, submits the following observations concerning the use of potassium bichromate in the treatment of Vincent's Stomatitis. These observations were made in the treatment of approximately 150 cases, and the results obtained lead us to believe that this drug is very beneficial for all cases of Vincent's stomatitis.

In every case treated pain has ceased within thirty minutes after treatment. Furthermore, in none of the cases treated once, has the patient returned for the second treatment with that peculiarly offensive breath so characteristic of the disease. It has not been necessary to administer more than two treatments in any case before the teeth could be scaled and polished without appreciable pain or haemorrhage. The cases treated ranged from the mild incipient type to those that had progressed to such an extent that after extraction of some of the teeth involved there was a depression where the alveolar ridge should have been.

There was no opportunity to observe a case of Vincent's associated with leucoplakia, or other mouth conditions, where the irritating nature of chromic acid might preclude its use. However, it is believed that because of the mild and non-irritating nature of potassium bichromate, it could be used with safety, even in the cases just mentioned.

This drug has also been used successfully in the treatment of those cases of pyorrhoea alveolaris in which there were present large numbers of spirilla other than those of Vincent.

The treatment technique is very simple. A 5 per cent. aqueous solution of the drug is prepared and, if compressed air is available, this solution is placed in a spray bottle, an air pressure of about 15 lb. used, and, by these means, the solution is forced well into the interproximal spaces and under gum margins. This is continued for three or four minutes. If compressed air is not available, a water syringe may be used to force the solution to the affected areas, or the solution may be used as a mouth wash by the patient. After using the solution, by whatever method selected, the patient should be instructed not to rinse out the mouth for at least a half hour and, furthermore, not to eat or drink anything until after the mouth has been thoroughly rinsed out with water. This simple treatment once a day will suffice.

There has been no unfavorable reactions in the cases mentioned using this treatment, with the exception of one patient swallowing a considerable quantity of the solution used, with a tendency toward nausea resulting. It is well to caution the patient not to swallow any of the solution.

This treatment is not offered as a specific for all spirochaetal infections of the soft tissues of the oral cavity, but is presented as a simple, mild and completely efficacious treatment for the infection known as Vincent's stomatitis.—*British Journal of Dental Science*.



## Report on the Canadian Dental Hygiene Council Delivered to the Ontario Dental Society

In order to correct some of the erroneous ideas that are circulating regarding the newly formed Canadian Dental Hygiene Council and its relation to the C.O.P.A., I am going to start off this report with a short history of the evolution of the idea which led to the organization of the council.

In the past, public dental educational work, largely carried on by local Oral Hygiene Committee scattered throughout the Dominion has lacked the four C's, Cash, Continuity, Co-ordination and Control.

The organization of the C.O.P.A. largely overcame these deficiencies and has certainly shown more real results and been of greater service to the dentists scattered throughout Canada than any organization in the past.

Even it has been unable to escape the ever ready tendency to criticism which, unfortunately, is not always of a constructive nature. Because it secured the wherewithal for carrying on its work with royalties received from the sale of Hutax products the C.O.P.A. was accused of commercialism in certain quarters.

Though the C.O.P.A. did everything within its power to divorce its Educational work from its commercial work and even offered to hand the business-end over to another concern, this still failed to satisfy these critics. Rather than be the cause of any dissension among the profession, however little it might be, the C.O.P.A. offered to comply with any suggestion which would remove criticism and dissension providing it assured the continuance of Educational work throughout Canada on a scale at least equal to what the C.O.P.A. had been doing.

About a dozen Toronto dentists of various opinions met together several times in an honest endeavor to work out a solution of these difficulties. The final suggestion which was adopted was, that a Canadian Dental Hygiene Council with a Dominion charter be organized. This Council to be constituted similarly to the Canadian Mental Hygiene Council and the Canadian Social Hygiene Council and to be made up of public spirited citizens, dentists and physicians, interested in public welfare work and financed by Government grants and public subscriptions.

The work of organizing this Council has now been energetically going on for several months with the result that a very Broad Dominion charter has been secured from the Federal Government, and many prominent personages have already become associated with it. The present composition of the council is as follows:

Patrons:—His Excellency, General the Right Hon. Lord Byng of Vimy, Governor General of Canada. The Lieut. Governors of the various Provinces.

President:—Gen. the Hon. S. C. Mewburn, K.C., of Hamilton, Ont.

Hon. Pres.:—Hon. H. S. Beland, Canadian Minister of Health, Ottawa, Ontario

Vice Pres.:—Mr. E. E. Reid, B.A., manager London Life Insurance Co., London, Ont.

Hon. Vice Pres.:—The Ministers of Health of the various Provinces.

Representatives on Council:—Dr. Nasmith of the Canadian Red Cross Association; Mr. J. E. Atkinson, manager Toronto "Daily Star"; The Pres. and Sec. of the Canadian Dental Association.

Provision has been made for the Canadian Dental Association to appoint nine, one from each of the nine Provinces.

Provision has also been made for the Provincial Dental Associations to be presented. It is the intention of the council to co-operate with the various local Hygiene Committees and to assist them in any work they may undertake. The object of the council will be to organize, direct and finance dental Educational work throughout Canada.

The Council hopes to have the moral and financial support of every dentist in Canada and the active support of as many as possible. When men like Gen. Mewburn, Mr. E. E. Reid, and others are willing to sacrifice their time and interests for the benefit of this council and its work surely it behooves every dentist to co-operate by giving their heartiest support in every way to this worthy cause.

It is expected that as soon as the council is completed, organized, and functioning there will no longer be any necessity for the C.O.P.A. to carry on Educational work and the council then expects to secure the services of Dr. Harry S. Thompson to act as its field officer to promote and direct educational campaigns throughout Canada.

The organizing committee of the council are:—

Drs. Trotter, Secombe, Eaton, Conboy, Grant, Broughton and Mason

I sincerely believe that the principles upon which this council is organized are ideal and with the united support of the dental profession should prove to be the most efficient and satisfactory means of carrying on dental Educational work through the Dominion which has been devised.

Chairman Organizing Executive.

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## Dentists' Legal Protective Association

Dr. R. G. McLaughlin occupied the Chair during the meeting of the Dentists' Legal Protective Association.

In opening the meeting of the Legal Protective Association, the Chairman announced that this was the first meeting of the Association and the preliminary report which was being presented was the report of the Committee which had been carrying on for the first six months of the first year. That Committee was composed of the following:

Drs. Harold Clark, A. D. Mason, Wallace Secombe, W. G. Thompson, R. G. McLean, R. G. McLaughlin (Chairman).

The Chairman then gave the Committee's report as follows:

At the last meeting of the Ontario Dental Association, held one year ago, the "Advisory Committee" was authorized to approach the Board of Directors of the R.C.D.S. and ask its co-operation in organizing in Ontario an association for the purpose of advising and defending the members of the dental profession, against unjust and frivolous charges of malpractice, or any cases affecting the honor and reputation of the dentist.

The Board of Directors when approached on this matter readily expressed approval of such an organization, and promised its co-operation, as far as it could legally do so. A member of the Board, Dr. W. G.



Thompson, was appointed on the committee as representing the Board. This augmented committee was given the full sanction of the Board to proceed with the organization.

The Committee at once proceeded to organize the Protective Association along the lines proposed to the Convention a year ago.

In the month of October, 1923, a circular letter was mailed to every dentist in Ontario, concisely explaining the objects and legal scope of the organization, and requesting those who wished to take advantage of such protection, to sign and return an enclosed membership card with the annual fee of \$3.00.

The response to that letter was highly satisfactory. A total of 462 dentists registered and these formed the membership for the first year.

The Council completed the formation of a definite constitution with by-laws, and after submitting it to legal counsel for revision sent a copy to every dentist in Ontario.

The active operations of the Association commenced November 1st, 1923, and the first year will thus end October 31st, 1924.

Dr. W. E. Willmott, secretary of the Board of Directors, consented to act as secretary-treasurer of the Association. Dr. Willmott will thus be able to send out the Annual notice for the fees of the Association at the same time as the College notices are mailed.

The members of the Executive Committee are happy to report that the results of the Association's operations for the first six months are most satisfactory.

During that period the Committee has dealt with some 15 cases of a more or less serious nature, and out of these 15 so far not one case has had to be defended in the Courts by the Council.

The legal counsel agreed upon and appointed by the committee is I. F. Hellmuth, K.C., of Toronto.

DR. WILLMOTT then gave the financial statement as follows:

|                                         |    |            |
|-----------------------------------------|----|------------|
| Fees from 460 members .....             |    | \$1,389.00 |
| Bank interest .....                     |    | 2.14       |
| <i>Disbursements:</i>                   |    |            |
| Bank Exchange .....                     | \$ | 4.20       |
| Receipt Books .....                     |    | 10.19      |
| Cash Book .....                         |    | 2.50       |
| Two Notices & Cards re Organizing ..... |    | 44.73      |
| Constitutions .....                     |    | 33.44      |
| Postage, Telephone, etc. ....           |    | 19.04      |
| Leaving Cash on hand and in bank .....  |    | 1,277.04   |
|                                         |    | <hr/>      |
|                                         |    | \$1,391.14 |
|                                         |    | <hr/>      |
|                                         |    | \$1,391.14 |
|                                         |    | <hr/>      |

Audited by the College Auditors.

Dr. Willmott seconded the adoption of the whole report.

Upon question, Dr. Willmott said they had not yet received the account of the Counsel who went over the Constitution nor had they received the bill for the Call of this meeting.

Motion for adoption of the Report was then put to the meeting and was Carried.

It was then moved by Dr. Willmott, seconded by Dr. Allan, that there be inserted in By-law No. 1, section B, as mailed out to the profession, the following clause:

"And one member to be appointed by the Board of directors." and with this amendment it was moved that the bylaws and constitution as mailed be accepted by this meeting. Carried.

It was then moved by Dr. Moore, seconded by Dr. Devitt,

That the same officers and the same Counsel be re-appointed. Carried.

Chairman thanked the meeting on behalf of the Committee, assuring them the Committee would do its best in carrying on to the next year.

Attention was here drawn by a member that according to the Constitution one man steps out of the Board of Directors each year.

Chairman informed the meeting that Dr. Thompson had been the appointee of the Board of Directors, and whether he would again be or not, he could not say, but at any rate it could be left to the Board of Directors to make the appointment which the Constitution authorized them to make. This being apparently satisfactory to the meeting.

DR. HAROLD CLARK: The presentation of this report has only taken a few moments, and only those active in it can know how much work it involves. The largest part of the work has been done by our Secretary, Dr. Willmott.

Dr. Clark then moved that in recognition of the services of Dr. Willmott throughout the year, an honorarium of \$100 be given to him.

Seconded by Dr. Trotter. Carried unanimously.

Dr. Willmott acknowledged, saying the president had spent quite as much time on it as he had, though perhaps not so much at night.

This finished the business of the Dentists' Legal Protective Association, and the meeting of the Ontario Dental Association once more went into regular session, Dr. F. J. Conboy resuming the Chair.

So far we feel the association has fully justified its existence. In the more serious of the unreasonable cases that were threatened, when the would-be litigants found they were face to face with a fully organized defence conducted by the legal counsel above named, they thought more seriously of the matter.

The protection of the good name and reputation of the dentist is of such vital importance, that we are convinced every practitioner in Ontario should be a member of this Protective Association.

The fee is very small, being only \$3.00 per year. The larger the membership the better service the Association will be able to render the profession.

Those who are not members may be enrolled at the regular registration office, by signing the membership card and paying the fee of \$3.00.

In adopting this report the members of the Association are asked:

(1) To grant your approval of the general plan of organization and the method of "carrying on" as adopted by the committee to the date of this report.

(2) That the constitution as printed and mailed to the members be approved.

(3) That the appointment of Mr. I. F. Hellmuth, K.C., as General Counsel of the Association be endorsed.

(4) That you appoint the officers and executive committee for the coming year as called for in the Constitution.

All of which is respectfully submitted."



Apropos the moral effect on would-be litigants when they found they were face to face with a fully organized defence, Dr. McLaughlin remarked: That is just where the work of the Association comes in. The great merit of the Association will be by showing this organized defence and the retaining of the proper legal counsel, that only those who know they have a bona fide case, and those who have a frivolous case and unreasonable case will think two or three times before they throw the matter into the Court, and so far it has succeeded even beyond our expectation. Remember this: that the Council has at all times, and will, play fair with the public, when we find that a practitioner is at fault we tell him so plainly and advise him to make a proper settlement with the complainant. That has been our policy.

Concluding, Dr. McLaughlin remarked: I want to say this before sitting down and Dr. Willmott will present the financial report, that I want to pay tribute to the splendid support that the members of the Committee gave the president during the past six months and before that, in organizing and helping with their advice all the way through in many of these trying cases, and I am sure the other members of the Committee will bear me out if I say in one case the representative of the Board, Dr. Thompson, rendered very valuable advice and wise intervention in having one serious case settled out of Court. The Council has been willing and will be willing to go to any pains, any trouble to assist any member of the Association in any difficulty or supposed difficulty they may find themselves in.

I have much pleasure, after Dr. Willmott presents his report, in moving the adoption of the whole report.

It was moved by Dr. Dunlop, seconded by Dr. Harold Clark,

THAT THE REPORT OF THE HYGIENE COMMITTEE AS PRINTED BE RECEIVED AND ADOPTED BY THIS ASSOCIATION. Carried.

The report of the Nominating Committee was then given by Dr. R. J. Sprott, as follows:

To the President and Members, Ontario Dental Association.

Gentlemen: Your Nominating Committee beg to nominate the following to the various offices and standing committees as called for in the constitution:

Hon. Pres., F. J. Conboy; President, Col. W. G. Thompson; Vice-Pres., J. C. Devitt; Archivist, C. A. Kennedy; Secy. and Treas., J. A. Bothwell.

*Board of Governors:*

T. F. Campbell of Galt, A. W. Ellis of Toronto, in place of E. L. Gausby and C. E. Brooks, retiring; and A. W. Winnett of Kingston, in place of J. C. Devitt.

*Oral Hygiene Committee:*

F. J. Conboy, H. E. Eaton, A. W. Ellis, F. C. Husband, J. C. Livett.

*Advisory Committee:*

R. G. McLaughlin, Harold Clark, A. D. A. Mason, R. G. McLean, Wallace Seccombe.

Respectfully submitted,

(Signed) R. J. Sprott,

Chairman Nominating Committee.

Dr. Sprott move the adoption of the report, which was seconded by Dr. A. Grant.

The Chairman then declared the meeting open for further nominations.

Dr. Campbell of Galt, begged leave to retire because of the distance he was located from the City, but the Chairman did not accept the resignation, assuring the Doctor he would not be called upon to come to Toronto too frequently and the Association wished to retain the benefit of his services.

There being no further nominations, the report of the Nominating Committee was then put to the meeting and carried.

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## Excerpts from an Address on Dental Education

*Dr. W. J. Gies.*

Discussion often causes confusion when there is lack of agreement on the meaning of the terms employed, or on the definitions involved. Are we agreed in our views of dentistry's character, duties and opportunities?

The lay public expects dentists to be intellectually, morally, and professionally, the peers of all who are engaged in scientific health service. The lay public expects dentists to be competent to render personal health service in a thoroughly modern and practical manner, and primarily for the welfare of the patient. It knows little of scientific requirements, and is often unable to tell the difference between very good service and very bad service. It is completely at the mercy of its health servants. But the lay public is rapidly informing itself about the full significance of the hurried attention, in brief appointments, to localize tasks without concern for correlated conditions of stress, and with "next—next" accelerations of doleful processions through the offices of many machine-like practitioners.

The educational public, which is a very large and alert portion of the lay public, readily detects signs of intellectual and cultural inferiority. It knows that the modern opportunities for health service cannot be met fully by anyone who lacks the degree of professional education or experience that is necessary for an understanding of the scientific requirement of such service.

Physicians and surgeons know that dentistry has not been basing its craftsmanship as solidly on the medico-dental sciences, as competency to cope with the processes and variations of dental and oral pathology requires. Leading physicians and surgeons find it difficult or impossible to co-operate effectively with, or professionally to trust, those who cannot talk the language of general health service and who do not think in forms of that language.

Investigators in the biological sciences (their number is rapidly increasing everywhere) are particularly competent to detect the wholly superficial, unverified, and often absurd, views on which the biological aspects of certain features of dental practice have been based empirically; and such men, astonished at the general indifference to research in the biological aspects of dentistry, justly doubt the efficiency and desirability of much that is done in the name of dentistry.

Dentists who have had the advantages of training not only in dentistry but also in medicine, deplore the multitude of errors in the pathological judgment of those whose training has been mainly in dental mechanics and whose vision of dentistry has been kept almost wholly within the narrow confines of such limited training.



# Editorial

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## Sterilization in Dentistry

Next to reproduction in the matter of cost in money and energy comes keeping clean. For fully half a century it has been known that many diseases are caused by bacteria, and that bacteria can be destroyed by poisons, unusual temperatures and mechanical disturbance, and yet acceptable means of avoiding disease by transmission have not been discovered. Very few of the public and many of those who have been compelled to study the transmission of disease by bacteria believe in the possibility of one person transmitting disease to another. The power of human resistance to bacterial infection is so great that many are willing to take the chance especially when another is involved.

Public health officers, physicians, nurses, dentists and veterinary surgeons should know the manner in which disease is transmitted and yet all of them make grave errors in surgical cleanliness. There can be no doubt but the physician on his rounds from house to house with his medicine bag and thermometer, carries with him disease-producing organisms or else disease cannot be carried by instruments or a third person.

The dentist who operates on human tissues day in and day out, without sterilizing his instruments, equipment or his hands, is surely defying the gods, or there is nothing in the theory of transmission of disease by instruments or equipment. Surgeons are at least ten years in advance of physicians, dentists and veterinary surgeons in this matter. During the early efforts of the surgeon to keep clean, he used drugs vaporized and locally applied, more recently the standard method has been to use heat in some form, wet for instruments and dry or steam heat for more perishable materials which come in contact with patients. The necessity for ster-

ilizing dry dressings and such materials has been routine in surgical and hospital practice for many years. It took dental educators at least fifteen years after the surgeons to reach on wet sterilization and we regret to say that they have not yet reached on dry sterilization. What is the sense of sterilizing cutting instruments and then using infected cotton to swab out the incision? If dentistry doesn't soon appreciate the necessity for sterilizing its dry materials as well as its steel cutting instruments, its offices should be placed in the same category before the public health officers as dairies, restaurants and barber shops. Dry dressings, such as towels, wipes, rolls, cotton wool, cotton pellets, gutta percha, paper points, etc. can be sterilizing in the oven of a cook stove or better, in a dry steam chamber of a hot water sterilizer. A dentist has no defence against a charge of transmission of disease if all his equipment is not surgically clean. The acute infectious diseases such as measles, mumps, scarlet fever, diphtheria, are readily transmitted in a dental office, not to mention syphilis, flu, and trench mouth.

## Dentistry and Its Problems

There are problems to be solved by all kinds and conditions of men, nations, empires and worlds. Each individual and each group addresses itself to its own problems. Those who set themselves up to be leaders among men must have popular respect, not necessarily any special ability to solve the problems of life. Those who set about to solve the problems of life are often not understood by the majority of people. The really popular person is the one who has a positive solution for every problem presented. It doesn't matter if the solution is shown to be wrong within a few months or even days, because such persons have enjoyed the popularity for the time and can be off on a popular solution of another problem. The people forget the past and take up with the new. Such persons never solve anything. They are too eager to keep in the public eye to give any problem long enough attention to solve it. If one would be popular one must not stick to a problem but change the subject, even if only slightly and proceed on a new tack. In politics such are known as opportunists, and there are many of them. Dentistry has its opportunists in dental politics, dental education, dental teaching and dental research. It is difficult to classify the efforts of men of present times but future generations make a just appraisal. The names of the men who set the mile posts in dentistry will never be forgotten. The opportunists pass from memory as soon as they pass from the scenes.

## Causes of Irregularities of the Teeth

In a recent article by Sir Arthur Keith, M.D.C.M., F.R.C.S., F.R.S., published by the Dental Board of the United Kingdom, as one of their lecturers, the author strikes at the root of the causes of facial irregularities and points out that the irregular formation and eruption of teeth are based on much broader principles than nasal obstruction, mouth breathing, too early loss or too long retention of deciduous teeth. In comparing ancient and modern skulls of inhabitants of the British Isles he has come to the conclusion that there is a narrowing of the arches and lengthening of the palates and vertical elongation of the alveolar process of the maxilla



in modern skulls. In consequence of this the lower jaw is depressed and swung backwards with a reduction in the angle of the ramus with the mandible. He also observed that in contracted arches there is no reduction in the vertical measurement of the nasal cavity, but the antra dip down below the level of the palate on which level they are found in the normal. If these observations prove to be verified by a greater number of comparisons and measurements, then the theories held in regard to disease of the nose, throat and teeth will have to be re-adjusted. The author's belief is that future discoveries will reveal a common cause for hypertrophied adenoids, enlarged tonsils, contracted palates, irregularities in the eruption of the teeth and malgrowth of the jaws, and that the source of all these irregularities will be traced to a disturbance of the elaborate system of hormones concerned in the regulation of normal growth.

## Transfer of Medical and Dental Inspection of School Children From the Education to the Health Department in Ontario

During all the time the Health department of the Ontario administration had no head it was reasonable that the Education department should have control of health education and the enforcement of health regulations remain subordinate in some other department, but now since there is a Minister of Health it would seem reasonable that all health regulations should come under the Health department. The published transfer says it was a mere formality, but on closer examination it is not so simple as it appears. The transfer occurred some years ago in cities of over 200,000, but no effort was made at that time to attack the problem in rural districts. The transfer places what is acknowledged to be a part of education in the hands of a body apart from boards of education. Boards of education and boards of health are similarly representing the people and both directing education and controlling the actions of pupils in the schools. To definitely define the powers of each in rural districts involves some fine principles in administration as well as the disturbance of what school trustees might well call vested rights. In the long run health education would seem to be best directed by the Education department and the enforcement of health regulations directed by the Health department.

## What is the Normal?

Dentistry is filled with more or less indefinite terms and expressions. Normal contacts for a child of twelve could hardly be identical in every particular with what might be called normal contacts for a patient of fifty. In a recent address by G. Northcroft, O.B.E., L.D.S., R.C.S., England, the author attempts to define normal in its various meanings. The *ideal normal* is the hypothetical standard which one dreams about but never sees, the one hundred per cent. perfect. The *normal for the species*, the type derived from the frequently found forms around which a group of variations oscillate. *Individual normal* refers to that which is best suited to the life activities of the individual organism as a whole.

## Editorial Notes

Dr. J. E. Wright has opened an office in Moose Jaw.

School dentistry in New York City has in four years reduced the percentage of children requiring dental service from 90 to 49%.

There is no interference with the amylolytic enzyme by an alkaline dentifrice, whereas an acid paste inhibits the enzyme. (Chillingworth).

The Eastern Ontario Dental Association held its annual gathering in Smiths Falls, September 29 and 30 under the presidency of Dr. O. K. Gibson.

Dr. Richard D. Hotham, a dentist practicing in Saskatoon, Sask., was found about a mile and a half west of the city with his brains blown out from a shot gun. He had been missing for several days.

The British Medical Association has appointed a committee on food. In commenting upon this the British Journal of Dental Science says there should be representatives of the Board of Health on the committee, but does not offer the suggestion that dentistry should also be represented.

Dr. E. J. Howe, St. Catharines, Ontario, brought action against the Niagara, St. Catharines and Toronto Railway for wrongful ejection from one of their cars. The jury assessed the company \$1,500 damages but the trial judge dismissed the case. An appeal has been argued at Osgoode Hall.

The evidence of how the fear of the dentist is ingrained into the minds of the people could be no better illustrated than by the fact that every layman or newspaper writer who discusses dentistry always gets his audience's or reader's attention by first dilating on the sufferings of the patient in a dental chair. He begins his lecture by talking to his audience upon a subject they are all familiar with.

Dentistry has not yet been noticed by medical, public health, or scientific bodies. There is no section of dentistry in any of the national or international bodies of such organizations, except in the American Medical Association where there is a section on stomatology. The British Scientific Association, or the same organization in America as Medical Congress, have sections on all manners of subjects and yet nothing about dentistry. Forestry, horticulture, agriculture, pharmacy, botany, bacteriology and many others are honored with sections but not so with dentistry. The British Association for the advancement of science met in Toronto in August, 1924, with one dentist in attendance, a similar number attended the meeting of the American Association in 1922. Dentistry will have to do something to get attention or quit talking among themselves about the great advances in dental science.



## Book Reviews

GEREATRICS, A TREATISE ON THE PREVENTION AND TREATMENT OF DISEASES OF OLD AGE AND THE CARE OF THE AGED, BY MALFORD W. THEWLIS, M.D., PUBLISHED BY C. V. MOSBY, ST. LOUIS, PRICE \$4.50.

Since no person ever wants to be old but on the other hand wishes to live a long time, it should be the aim of all to take such care of themselves that old age will be approached with pleasant anticipations. While the work under review is intended for the general practitioner, it is none the less interesting to the specialist or even the layman. The chapter on senile dementia is most interesting because so many of the cases described have come under the observation of most people without their putting their finger on the significance of the symptoms. Many chapters are opened with a case history and then followed with the main features of the disease and the treatment. This is a new departure in discussing medical and surgical treatment. The author says old people do not bear anaesthetics well nor surgical operations. Old people must be kept out of bed or they lose heart. The two great enemies of the old man are a young wife and a good cook. The full physiological effect of alcohol is shown by a red spot on each cheek. The author believes in using whiskey for the aged. Alcohol in large doses for the relief of an acute disease is not habit forming. It is the small dose of the convalescent that is habit forming. Every aspect of old age is discussed from senile habits to acute termination diseases.

THE TREATMENT OF THE COMMON DISORDERS OF DIGESTION, BY JOHN L. KANTOR, PH.D., M.D., CHIEF IN GASTROINTESTINAL DISEASES, VANDERBILT CLINIC, COLUMBIA UNIVERSITY, ETC., PUBLISHED BY C. V. MOSBY, ST. LOUIS, 1924.

We review this book because it is written in a style so simple, straightforward and rational, that every dentist could read it with great advantage to himself and to his patients. In these days of dietetic discussions it is well to read what a practical physician has found out about the subject. Dentists are personally inclined to digestive disturbance from indoor work, lack of exercise and unnatural positions of the body. For this reason alone the book before us is worth the reading. The opening chapter lays down these rules:

1. Meals should be on time.
2. Three meals a day are enough for normal people.
3. Food should be properly chewed.
4. Food should include milk, butter, eggs, cereals, meats, fish, green and starchy vegetables and fruit.
5. Sweets should be only taken at meals.
6. A definite amount of water should be taken each day. Two quarts for an adult.
7. The bowels should move regularly without cathartics.
8. The mouth and teeth should be kept in good order.

The main objects for prescribing a dietary are:

1. Allay gastronomical irritability.
2. Improve the state of nutrition.
3. Increase the bulk of faeces.

Easy digestible foods are milk, eggs, well-cooked fish, meat juices, finely chopped lean meat, mashed potatoes, purées, light puddings, biscuit and toast water.

Foods difficult of digestion are sour and spiced foods, e.g., vinegar pickles relishes; fat and greasy foods, fat meats, fried foods and gravies, sweets, e.g., pastries, candies, foods with too much fibre, e.g., cucumbers, cocoanut, cabbage.

Such facts as the above illustrate the practical character of the book. There are many illustrations and a good glossary.

**FOR RENT**—Dental Suite. First floor north east corner Bloor & Yonge. Three years lease from 1st of January. Rent reasonable. Apply Dr. J. A. Bothwell, 86 Bloor St. West.

**FOR SALE**—City Practice For Sale; Centrally located; low overhead; doing fair business; present occupant leaving for Detroit. Box 15, Dental Journal, 73 Richmond W., Toronto.

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# Dominion Dental Journal

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TORONTO, DECEMBER, 1924

No. 12

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## Play Fair

*S. W. Leslie, D.D.S., L.D.S., Toronto.*

While hanging up my diploma on the walls of my newly decorated offices, I re-read it for the twentieth time. You see, being a recent graduate, the memories of hard work for five years at the College, the feelings of fear and perhaps of despair before writing each year's finals, the joys of "getting through," and the excitement and thrills of walking up the aisle amidst a very silent audience and receiving the long sought for piece of parchment which bears mute evidence to the fact that I am "qualified to practice dentistry in all its branches," all these recollections will recur to me every time I look at the framed piece of parchment.

Amongst the various branches of Dental Science which appealed to me most was Preventive Dentistry. This subject deals with the theories of the causes of Dental disease and methods not of curing the ravages of dental caries but of PREVENTING it as its name would imply. The highest ideal of dentistry is, to my mind, not the making of beautiful restorations but preventing the necessity of them. To do this one must begin with the younger generation.

School being over, I sought other places where I could find boys in groups to try out some of the well established precepts of Preventive Dentistry, especially the teaching of Oral Hygiene.

One day I discovered, bordering on the shore of Lake Ontario and hidden from the steady stream of automobiles on the highway by numerous trees and bushes, a camp of about one hundred Jewish boys of various ages who were playing around very happily on a square field in front of their tents.

The camp was for the underprivileged boy and conducted by the B'Nai Brith Organization of Toronto under the able leadership of Mr. Marcus, who assured me of full co-operation in carrying out my plans.

This article is not supposed to be a resume on Preventive Dentistry for we all know the underlying principles and how to teach them to youngsters, nor am I one capable enough to teach anything on Preventive Dentistry to practitioners older and far more experienced than myself, suffice it is to say that the usual routine of health talks, tooth-brush drills, and inspections, etc., was carried out.

But what struck me most at the beginning was the attitude of the youngsters towards the dentist.

Some of the more timid youngsters would dodge me at first and stay in their tents. The brazen ones came up and told me that they "had no toothache," or he did not want his "tooth yanked." The idea which seemed firmly fixed in most of their little heads was that a dentist was no more or less than a tooth puller and a person who with devilish instruments delighted in tormenting them and causing great pains.

Seeing that I was in a hostile camp, I immediately adopted the following tactics, and it was not very long before I had nearly all the boys co-operating with me in the most jolly manner.

I showed the boys that besides being a dentist I was also human. I could and did play various ball games with them, that I would tell a story and teach them some camp songs if they were quiet, that I sympathized with them when they told me their little troubles and laughed with them when they "cracked" their jokes, and above all they learnt that in their dealings with me there never was or would be a breach of confidence. The health talks were not long tiresome sermons but short and to the point. I appealed to their sense of honor, fairness and manliness to give their little teeth a chance for health and long life and incidentally they would also enjoy the same.

Previously I said I had nearly all the youngsters won over to me. There still were a few who viewed me with suspicion and distrust. Upon inquiring as to their suspicious looks, I discovered that they had already been to a "dentist." One little fellow told me that the dentist had promised him no pain and he "nearly pulled my head off." From the others I elicited similar stories only slightly more exaggerated and distorted. Now even if we were to deduct 90% of their stories as being purely imaginative, we still are confronted with the fact that some dentist had committed, what is to the boy an unpardonable sin, a breach of trust. That he was tricked in some manner and that the dentist did not "play fair."

Now my advice is especially to the young practitioner who wishes to treat children and who lacks experience in handling them, not to the older practitioner who has gained his knowledge through bitter experience. Tell the youngsters you may hurt them a little, or that this will have a funny taste, etc. Be sure that whatever you tell them is absolutely true and that such and such will and does happen. You will soon find that the youngster trusts you, and has absolute confidence in you and when the situation arrives where pain is absolutely inevitable, you will find that the youngster will "grin and bear it" because he knows you are one who "plays fair."

If I could be permitted a few more lines in your valuable Journal, I would like to thank the Colgate Co. for their suggestions and supplies of tooth-paste, and also the leaders and councillors of the camp where I spent many enjoyable hours.

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## Our Dental Responsibility

*Carlton Fox, D.D.S., Detroit.*

*Read before the Academy of Dentistry, Toronto*

Within the last decade dentistry has made more progress than in any other given period of time. From the earliest Chinese and Egyptian civilization to within a very few years of the recent great conflict, which



not only changed the history of the world but brought about a marked alteration in the dental profession, we had been interested in the mechanical aspect of dentistry, restoring broken down and diseased conditions of the mouth, and had paid no attention to the systematic effect these conditions might have upon a patient. The research work of several men, the most prominent of whom are Drs. Rosenow, Hunter, Billings, Irons, Meyer, Duke, Price, and others of equal standing, is responsible for this radical change in our relationship to the laity in general and our patients in particular. The more general use of the X-Ray machine and the shadows it produces on a light sensitive material when properly placed, coupled with the findings of these men, is really the reason for our having today a very definite basis from which to draw the conclusions that our practices of the past, namely, endeavoring to replace with a pink gutta percha point, or some baser material, that which the Almighty meant to be a healthy pulp, were in the big majority of cases all wrong.

For every action there is a reaction. The public press spread the news a few years ago that teeth were the cause of rheumatism. To a certain degree they were right, but in the great majority of cases they were not. The Professions of Medicine and Dentistry grasped the psychology of the mob and as a result innumerable teeth were removed, relieving a few people of their rheumatics, but most of them of their natural organs of mastication, with no miraculous cure as had been expected. For a period of time every tooth that had a dark area radiographically apparent at its apex or approximating it, was condemned. We, as dentists, were not alone in this tooth slaughter. The medical profession also did its part by sending to the noose, teeth, to which the exodontist acted as executioner. Science, however, has staid our hand. Lectures and essays, given and published at our meetings and in our journals, have brought about the education of the professions at large. They have taught us the meaning of the shadows depicted in the radiograph, and also the relationship of unhealthy oral structures to the human machine.

With the responsibility of our present status in the eyes of the world, it is only fitting that we be prepared to assume the burden and give to our clientele the professional service it deserves. Therefore when a patient consults us it is imperative that we be able to detect certain physical signs that are characteristic of serious systematic disturbances. A few minutes conversation will reveal a fund of information that usually is beneficial to the dentist, especially if there is an extensive amount of restorative work to be done.

Many diseases are apparent to the naked eye. Syphilis may be detected in several ways. First, if the hair has fallen out in patches or if the cornea of the eye fails to react to sudden changes in light, while in the tertiary form lues is responsible for the perforation of the septum, followed by a so-called sunken or saddle nose. Hereditary luetic conditions are manifested in Hutchenson's teeth.

The eye tells a great many tales if we observe them closely. Swollen lids are suggestive of anaemia and erysipelas, but also are indicative of kidney diseases. Jaundice is the easiest of all diseases to diagnose, giving its characteristic yellowish tinge to the eye and skin, while anaemia casts a bluish hue to the eye ball. A unilateral dilatation of the pupils is found in tuberculosis. The gray ring at the edge of the cornea is a sign of old age, and may also indicate arterial sclerosis or high blood pressure. If the lips

are pale, an anaemic condition may be expected, while if they present a bluish tinge, heart and lung conditions are usually the causative factors. One other reason for the bluish cast to the lips is the use of aspirin in excess. If the use of this drug is found to be the cause of this definite diagnostic sign, then it is our duty to find out why it is used in quantities sufficient to markedly change the normal picture. Upon questioning patients as to the use of this drug, they will give you many varied and peculiar answers, but nevertheless their answers may reveal very susceptible individuals and those of exceptional lowered resistance, which patients would of course be a poor dental risk. Enlarged glands of the neck may be due to an abscessed condition of the teeth. Follicular tonsilitis, tuberculosis, syphilis, malignancies and mumps also cause an adenitis of the maxillary chain, while thyroid enlargements may or may not cause bulging of the eyes.

Edema of the extremities is indicative of heart and kidney diseases, while moist hands suggest some thyroid disturbance. Clubbed fingers, though not a definite diagnostic sign, are closely affiliated with tuberculosis, chronic bronchitis and asthma, also chronic heart diseases. Arthritis, in its various forms, may be detected by deformities of the several joints, more especially of the hands and feet, and of these the distal phalanges.

Many of you are asking yourselves, "Why is he talking about all this physical diagnostic stuff?" I'll tell you why, gentlemen, we have a responsibility to live up to. It is our duty to our patients to be able to recognize abnormalities, before we do that patient an injustice, by filling one tooth that might have a bearing upon the systemic condition, of which the patient may be the victim.

A few of the diseases in which the teeth play a prominent part are as follows: Conjunctivitis, Iritis, Corneal Ulcers, some cases of Retinitis, Choroiditis, Visual Disturbances of the nervous motor mechanism of the eye, Chronic Inflammatory processes in the nose, low grade inflammatory changes of the maxillary sinuses, predisposing to Acute Sinusitis, Chronic Tonsilitis, Pharyngitis, Laryngitis and Bronchitis. Also the draining of infectious material of a lower first molar will cause an adenitis of the submaxillary and cervical glands and may cause tinnitus, vertigo, sclerosis of the ossicles, chronic furunculosis of the external auditory canal, and disturbances of the pneumo-gastric nerve, with an increased cardiac inhibition, periodic loss of voice, occipital headaches, and asthmatic attacks, and club feet.

From the actual absorption of pus and toxic material, teeth may cause gastric disorders, various joint disturbances, especially of the hypertrophic type and muscular inflammations and stiffness. Anaemias of various types are traceable to teeth, while pelvic inflammations, intestinal and abdominal derangements, accompanied with a few cases of nephritis, are traceable to the oral cavity as a focus.

An article recently published by one of the leading drug manufacturers, who maintains one of the largest research laboratories in this country states:

"The train of systemic disturbances excited by the deleterious influence of micro-organisms contained in the pus of pyorrhea ranges from gastritis to actual septicaemia. A mouth containing decayed teeth is a poison laboratory which sends a host of bacteria into the alimentary tract of the patient, but when the teeth are capped and the pus can find no outlet, the bacteria are liable to cause still greater trouble. They multiply under the favorable conditions furnished by the crown and bridge work and they seek



an outlet through the porous bone tissue, thus gaining access to the lymphatic system, and are then carried to distant organs.

These infections are generally of long duration, their progress is slow, and the dangerous feature is that the existence of the infection is unknown to the individual, and often not recognized by the dentist to whose notice it generally comes in its early stage.

Endocarditis, Arthritis, Neuritis, Periostitis, Ocular and Oral disturbances have been traced to oral foci and, in a paper by Cotton read at the meeting of the New York Psychiatric Society, it was shown that chronic, masked, or focal infections play a very important role in the etiology of mental disturbances.

Most of these conditions were cleared up when the sources of infection were eradicated, but in addition to the elimination of the oral foci, systemic treatment coupled with such remedial measures as will raise the recuperative and defensive power of the tissues should also be employed."

Added to this is the statement of Dr. W. A. Price saying that ninety per cent of all degenerative diseases are due to dental foci. These are the reasons, gentlemen, that I ask you to consider that before you attempt to restore any missing dental organ, in the mouth of an individual that has the slightest degree of lowered vitality or resistance.

How many of you have known of patients that had Diabetes, Syphilis, Nephritis, Tuberculosis, Acute Tonsillitis, Lead Poisoning, or an acute infection somewhere in the body, that did not have some dental manifestation? After a serious illness, especially influenza, how many of you have had a patient come to your office with a swollen abscessed tooth, that from the history of injury or mechanical restoration, should not be in the condition that you find it? Everyone of you have had such an experience, therefore, if these conditions which have just been mentioned will cause dental disturbances, is it not logical that thirty-two organs, that are not normal, will cause the multitude of ailments that were previously mentioned?

In order that we be able to distinguish between those conditions in the mouth that demand radical or conservative treatment, it is necessary for us to make a modern and careful survey of the mouth of patient.

Taking it for granted that a thorough history has been taken, which includes the general history of the patient, age, sex, nationality, family history, survey of the heart, pulse, blood temperature and hemoglobin, etc., we now begin the survey of the mouth and teeth by aural, digital and instrumental examination. The color of the membranes of the investing tissues of the teeth and mouth should be noted, which if normal, have characteristic firmness and pinkness, while the gingivae is closely attached to the teeth. Observe any calcific deposits, disturbances of malocclusion, crowded arches, debris in the interproximate spaces, poorly adapted crowns, lack of contact points, restorations which are insanitary or ill fitting, or any irritation whatsoever.

A gentle pressure made in a circular movement, beginning over the root ends of the teeth and directed toward the crown, should in the normal, elicit no sense of tenderness in the periosteum underlying such areas; but many chronic pericementomas which have never been in evidence may be detected, by the presence of pain, in a few seconds. Any variance from the normal is reflected in the color of the tissues, and the greater the bacterial invasion, the greater the flow of pus under the above mentioned digital pressure.

One should note the quantity of the saliva, whether of heavy consistency, or limpid, and the amount of putrefactive bacteria on the tongue. If we find calcific deposits or erosion in the region of Stenson's duct—what is the cause? The parotid gland is governed by the thyroid and parathyroid glands, and the sub-lingual and sub-maxillary glands are governed by the adrenal and pituitary glands. Therefore, if we find erosion or calcific deposits in this region, we know the cause is from the thyroid or parathyroid glands. If in the region of Whartous duct, the adrenal or pituitary glands are at fault. As for treatment we can do nothing ourselves, because it is systemic, and should be in the Physician's hands. If we will refer our patient to a competent physician with our findings, and the reasons therefor, we will gain the confidence of the patient as well as the physician.

The tonsils should be examined by placing a mouth mirror between the pillars and below the tonsils. Then with the index finger above the tonsil, apply a gentle pressure, and much to one's surprise quite often pus may be detected in a seemingly good tonsil. Why do we make this examination? Because on account of anatomical association, pus present in the tonsils frequently involves the third molar in inflammation of both acute and chronic natures. Here is another place dentistry and medicine overlap.

Besides the examination of individual teeth by means of exploration and percussion, the tests by the use of the electric pulp tester, transillumination, and thermal stimulation have been found to aid us materially.

Where we have irregularity of teeth, we most often find a high palate, and in such cases one should remember that they are commonly associated with deflections of the nasal septum, contracted nares, spurs, and attendant chronic atrophy, hypertrophic internasal conditions, the invariable results of which are pathological affections of the nasal accessory sinuses. Such individuals are subject to mastoiditis and middle ear diseases.

(G. B. Brown).

Protrusion of the tongue should show by its extent or deflection from one side to another, the presence or absence of nervous conditions which might affect the nervous control.

We must be able to recognize the early manifestations of precancerous conditions, as delay in treatment may be fatal.

Epulis is a commonly used but confused term, employed to distinguish growths which usually originate in the periosteum between or around the necks of teeth or sockets. Such a growth may be a papilloma, fibroma, sarcoma, or any of the tumors which might spring from the fibrous tissue of the gums and periosteum, but it is generally used to describe a certain giant cell sarcoma. The mushroom-like growths are benign at the beginning but sooner or later become malignant through having been irritated by biting or by the application of iodine or other caustics. They are usually found in the anterior portion of the mouth.

Ulcers of the lip may be due to Syphilis, tuberculosis, septic infection or injury. If an ulcer is allowed to become chronic an innocent sore may become malignant. In elderly people the continued irritation of jagged teeth, and the constant use of a pipe predisposes to a cancerous growth known as epithelioma, which differs from chancre by the length of history, the dry quiet appearance, absence of sore throat, secondary eruptions, and of large submaxillary buboes.

According to Butlin the five most characteristic and important of precancerous or early cancerous lesions are: (1) a little plaque-like hard area, smooth and polished, but neither ulcerated nor excoriated. (2) the trans-



formation or replacement of a simple ulcer by a cancerous ulcer, which only differs from the simple ulcer by feeling a little stiffer and a very little firmer. (3) the transformation of an entire plaque of leudoplakia tongue into cancer, only marked at first by very slight and superficial hardening. (4) a white, warty growth or a compound wart, neither broken nor ulcerated, and feeling at first as if it were fixed to the mucous membrane and quite superficial.

Carefully examine the tongue to disclose evidence of chronic ulceration, character of its surface, whether clean or coated, deeply fissured or affected by leukoplakia.

*Leukoplakia*: This is a term to describe an opaque dead white or slightly bluish or yellowish patch, often multiple patches coalescing to form a single area. It is the most frequent forerunner of cancer of the tongue. It generally appears at the tip or border of the tongue of Buccal fold. It is frequently thickened at the center, and often feels harder and drier than the surrounding normal mucosa, both to the patient and operator. Later, it may become more firm and perhaps fissured, the white covering being cast off in places leaving patches of red, raw tissue. Warts and fibromas on the tongue may after a time of innocences take on malignant growth. (Waldron).

Leukoplakia should not, as long as there is no cracking or peeling off or formation of ulcer, receive active local treatment other than the use of radium. The removal of the cause, tobacco, irritation, or treatment of existing syphilis usually suffices. (Waldron).

(*Periodontoclasia*): Fully 90 per cent. of all persons are affected with this disease, therefore, it behooves us to take note seriously of any gingivitis or inflammation at the gum margin which may in time extend to the pericementum of the root, and in all cases in question pressure about the necks of teeth should be made to disclose evidence of pus in any quantity.

*Trench Mouth*: This disease is confused with pyorrhea alveolaris and is known as Vincent's Disease, a fusospirochetal infection of the mouth. The tonsils may be affected, from which a yellow sloughing ulcer may spread to the soft palate and other parts of the mouth. A second form affects, more particularly, the gums and closely resembles the most severe type of peridontoclasia. Still another type causes a general inflammation and is not infrequently fatal in its effect. Special attention should be given to this disease, as the infection may travel the entire course of the alimentary canal, forming ulcers as it progresses. Diagnosis is made by microscopic examination.

Stomatitis is an inflammation of the mucous membrane of the mouth, and is classified as follows:

Local acute stomatitis:—

- (a) Catarrhal
- (b) Ulcerative
  1. Canker sores.
  2. Alveolar ulcerations.
- (c) Herpetic
- (d) Mycotoc (Thrush)
- (e) Gangrenous

Symptomatic Mouth lesions:—

- (A) Acute constitutional diseases
  1. Measles

2. Diphtheria
3. Scarlatina
4. Typhoid
- (B) Chronic Constitutional Diseases.
1. Tuberculosis
2. Syphilis
  - a. Chancre
  - b. Patches
  - c. Gumma
  - d. Ulcerative gingivitis
- (C) Drugs
1. Mercury
2. Lead
3. Iodides
4. Oilocarpin
5. Iodine.

We can readily see that this definition covers a multitude of sins and has in its classification several of our specific diseases. Therefore it is more than important in our diagnosis.

Cysts are not an uncommon sight in the dental office, and should receive our close attention when making our survey of the mouth. The most common of these is the retention cyst caused by the obstruction of a duct of any of the glands of the oral cavity.

Time will not permit an extensive outline of radiographic technic. We would advise, however, that radiograms be clear reproductions of the areas contained therein, with no distortion as to the length or breadth so that a correct interpretation can be made.

Some of the ill-informed members of our profession still maintain that only minor importance should be attached to the findings of the radiogram, their claim being that such images can be construed as showing conditions which do not actually exist.

Such an attitude as this can be explained as being the result of lack of knowledge of the fundamental principles of radiography and especially of the science of interpretation.

The idea is prevalent also among these men, and more decidedly among medical men of the same type, that the interpretation of a dental radiogram is an extremely simple matter, requiring little, if any preparation, on the part of the one who is to make the interpretation. This erroneous idea has led many incapable persons to attempt to interpret radiograms with the resulting condemnation and slaughter of many healthy teeth.

The first essential of interpretation is an accurate knowledge of the anatomy and physiology of the parts under consideration, as a radiogram is a shadow picture, and a shadow picture is meaningless unless one is thoroughly familiar with the main characteristics of the original. In addition to mere outlines shown in a shadow picture, the radiogram shows varying densities due to the fact that the roentgen ray penetrates all matter in inverse ratio to its mass of density. These varying densities are often misinterpreted and therefore it is well we have them fixed in our mind, so as to recognize them when a diagnosis is to be made. The shadows vary with different individuals and also with the varying angles of radiation.

If you will keep the following in mind and adhere to it closely in the interpretation of the radiogram you will find it a great help.



## Mandible

1. Light areas
  - a. Sygomatic arch
  - b. Border of tuberosity
  - c. Floor of antrum
    - 1 Accessory antral cells
  - d. Septum of the nose
    - 1 Sometimes the cartilage of the alar
  - e. Lamina dura or alveolar border around teeth
  - f. Teeth
2. Dark areas
  - a. Anterior palatine foramen
  - b. Malis of the nose
  - c. Canine fossa
  - d. Infra orbital foramen
  - e. Post palatine foramen
  - f. Maxillary sinus
  - g. Pericemental membrane

## Mandible

1. Light areas
  - a. Lower border of bone
  - b. External oblique line
  - c. Myol-hyoid ridge
  - d. Symphysis
  - e. Mental spines or Genio-hyoid tubercals
  - f. Mental eminence
  - g. Lamina dura
  - h. Teeth
2. Dark areas
  - a. Mental foramen
  - b. Mandibular canal
  - c. Pericemental membrane
  - d. Lack of cancellations in 15 per cent. of cases.

After gaining an accurate knowledge of the anatomy and physiology of the parts, the next step is to become familiar with their radiographic appearance under normal conditions, for unless one is familiar with the normal it is obviously impossible to recognize pathological or abnormal conditions unless they are of glaring nature. By normal appearance, we mean normal in all respects—free—not only from the previously mentioned conditions, but also from technical errors, the chief of which is distortion. To avoid this mistake we must adhere most religiously to a technique which results in the shadows of the structures under scrutiny being imposed upon the film in their correct proportions.

In addition to these requisites, one attempting to interpret radiograms correctly must understand enough of the fundamental rules of the technique involved in its making, to know whether or not the method used was correct or faulty, and if faulty, whether the degree of error was sufficient to render it useless.

In radiograms correctly made the structures under normal conditions have a characteristic appearance due to the varying densities of the contained structures. For this reason metallic objects such as gold crowns and fillings appear in white masses, and root fillings as somewhat less dense

white line. The enamel and dentine are next in density, while root canals show plainly as dark channels in the dentine. The Alveolar process and maxillae show their fine, uniform cancellous structures in varying degrees of density, depending upon their thickness.

Since the radiogram is transparent proper illumination is of the utmost importance. This precaution will permit a careful study under light conditions which favor a maximum detail.

Normal alveolar process when correctly radiographed has a distinct appearance owing to its anatomical structure and chemical composition. There is an irregularity of cancellations and a harmonious blending of lights and darks in the picture. The irregularity of cancellation is due to the fact that the spaces which constitute spongy bone are irregular in shape and size, for spongy bone is made up of lamellae, which instead of being laid down in the orderly manner as in compact bone, are arranged in a disorderly way. These groups of lamellae form strands of bone tissue which unite and in uniting form cavities of irregular shapes. For this reason a picture of spongy bone, when normal, shows white lines composed of thin delicate strands of bone tissue enclosing dark areas, no two of which are exactly alike. Therefore the picture presented by normal alveolar bone is one of irregularly shaped minute cavities surrounded by fine delicate strands of bone structure.

When bone is subjected to injurious influences, the cancellations lose their clear cut borders and become smaller and close together. Therefore whenever cancellated structure tends to become regular, ill-deformed and homogeneous, the suspicion of pathological process is entirely justified.

As the presence of calcium salts in the bone tends to obstruct the passage of rays, an increase or decrease of this factor will be apparent in the radiogram. If an increase is present, we have a greater density with a resulting lighter area, termed radio opaque area. If the reverse is true we have less density with the dark area called radiolucent.

In the study of radiograms therefore, a definite effort should be made to determine whether or not a change from the normal has occurred. If we find that there has been a change, we must then attempt to ascertain the cause of it. In numerous instances the cause may be apparent in the radiogram, but in far more the cause is subject to question. This fact definitely established the necessity of recording clinical findings, such as history, conditions of dentition and occlusion, as well as the physical state of the soft tissue of the mouth.

In judging the relationship of individual teeth to any suspected condition, two structures having a characteristic radiographic appearance must be carefully scrutinized. These are the peridental membrane, visible as a fine, even, close fitting Black (radiolescent) line and immediately exterior to this, the peridental lamellae, showing as a similar, even white (radioopaque line. About a healthy tooth, these two structures show no variation of thickness or contour.

If a pathological process has its origin within a tooth, the first structure to be subjected to its influence is the peridental membrane. This is indicated by a thickening of fine, even, black line at the point of irritation. As the membrane is closely encased in the lamellae, its thickening or hypertrophy pushes out the peridental lamella causing it to sag or lose the normal contour at the seat of the inflammatory process. If this inflammatory process remains unchecked and continues to progress the hypertrophy of the peri-



dental membrane continues with resulting encroachment upon the alveolar bone structures. With the changes in nutrition which accompany progressive inflammatory processes, there is a resultant decrease of the calcium salt in the adjacent alveolar bone as well as the diminution of the bone lamellae, all of which tend to lessen the resistance usually offered by these structures to the passage of rays. For this reason the area is rendered more radiolucent than is characteristic of normal structure.

Here we must remember that infection is not necessarily the cause of such tissue change. Irritants such as chemical, mechanical, thermal, electrical, may produce conditions similar in appearance. Clinical facts again must be carefully reviewed.

Cysts and tumors of the maxillae, owing to the character of the tissue changes which take place in their development, are visible as radiolucent areas. Due to lack of nutrition they are radiographically demonstrated as translucent areas.

Necrosis Rarefying Osteitis or Caries within the alveolar bone or supporting structure are manifest in the radiogram also as radiolucent areas. They differ in appearance from cysts and pericementomae in that there is a less sharp line of demarkation between the radiolucent and the surrounding tissue.

Another type of radiographic variation is increased radiopacity. This reaction may be defensive in character resulting from an increase in the number of bone cells. This increased deposition of lamellae may render the bone in the affected area very dense and compact in character.

This condition, which is doubtless due to a morbid increase of nutrition, may, as in the case of progressive inflammations, be due to infection or any of the other irritants mentioned.

Radiograms of edentulous areas are advisable because either of the radiographic variations, progressive or defensive, may be encountered in the alveolar bone after all the teeth previously held there had been the seat of an infection process. If upon the removal of such teeth the infected area is not eliminated, either through natural means or curretment, the condition may persist, and if so it may be shown by properly made radiograms.

We must safeguard the trust placed in us by the patient. If a healthy tooth is condemned through our inability to make a correct diagnosis, we are robbing the patient of a part of his masticatory apparatus.

On the other hand if pathology is retained through faulty interpretation, we are then subjecting the patient's health to the gravest of dangers, namely auto-intoxication from focal infection. The blood passing a given point several times per minute may cause a generalization of this toxin.

Therefore in seeking out the various abnormal and pathologic conditions to which teeth and the adjacent tissues are subject, we should not be misled by indefinite shadows in radiograms. Only those made in accordance with a definite and exacting technique should be considered as diagnostic aids. If a doubt exists, do not hesitate to make another or several exposures if necessary, thus assuring yourself that any conclusion reached will be founded upon exact facts.

Thus far we have endeavored to bring before you the responsibility that is placed upon us pertaining to teeth as foci of infection. In a brief way, physical, oral and radiographic diagnosis has been reviewed, stressing the relationship of oral infections to systemic disease; and in turn systemic

disease to oral infection. We have mentioned the importance of early diagnosis of oral abnormalities, and the essential points of radiographic interpretation.

## Pathology of the Peridontal Membrane

*J. S. Graham, M.B., Toronto.*

*(Read before the Ontario Dental Society)*

There has been a wide divergence of opinion as to the pathology and causative factors in the disease spoken of by some as pyorrhea and by others as Periodontitis.

In the University of Brussels there is in the Library a collection of no less than 550 studies on this subject, and in the Library of the University of Pennsylvania some five hundred books and articles.

Two schools of thought have gradually been evolved. The earlier feeling was that the disease process always commenced from without. Riggs felt that this was the case and based his views on his ability to control the disease to a certain extent by external work, such as scaling and cleanliness.

Miller thought the condition commenced as an infective process, starting as a gingivitis, and later invading the structures. Roemer and Langraf, both pathologists, felt the same: that first there was a gingivitis and later bone atrophy.

Black thinks that there is primarily a gingivitis and that the infective process follows, but differs in that he thinks the loss of bone is due to infection together with stripping of the pericemental fibres, but that the major cause of absorption of alveolar bone is due to detachment of the pericementum from the cementum. This point will be taken up later.

A second group of men think that there are two distinct types of periodontitis with quite different aetiological factors. The one has been spoken of as Periodontitis Simplex or horizontal pyorrhea—a slow progressive gingivitis with shallow pockets and but little divergence from normal mobility in the early stages. General or local disorders of the gingiva occur, causing relaxation of fibres extending into the papillae with the subsequent formation of a subgingival space. There is a gradual deepening of the subgingival space with extension downwards of epithelium. Infection now enters the gingiva and gradually extends downward causing stripping of the upper pericemental fibres and a shallow pocket is the result. The crest of the alveolar bone is always absorbed in advance of the shallow descending pus pocket. In this type there is no extensive absorption of the alveolar process nor of inflammatory reaction in the pericementum. This simplex type comprises 20% or less of all cases.

The other type which has been spoken of as Periodontitis Complex or Vertical Pyorrhea is quite different from an aetiological standpoint in that the disease process starts from within. John Hunter in 1771 noted that the first occurrence in this disease was a wasting away of the alveolar process. Prinz states that the absolute constant initial lesion is a marginal alveolar atrophy.

Holding this view at the present time are Talbot, Hopewell-Smith, Fleischman and Gottlieb. Prinz goes on to say in his excellent article that this view is also held by Box, and that in general, in the very early stages,



the pericementum is free from inflammation, and stresses the absence of pain as a profound negative symptom as a proof of this view. Box holds that while the rarefaction of the alveolar process is an early spectacular phase of this disease and always precedes the gingival lesion in this group, yet the essential primary lesion is in the pericementum. To this initial lesion of a true periodontis he has given the term pericementitis fibrosa. By Periodontis we mean an inflammatory condition affecting not only the pericementum but also the supporting bone and the gingiva.

The disease process commences with cell proliferation in the immediate neighborhood of the minute blood-vessels in the pericementum. The cells predominating in the first instance are the endothelial type, but there is also a marked proliferation of an early type of fibroblast cell. Proportionately they are very rare—an indication that the early stages are not due to a reaction on the part of the tissue to an injury complicated either by poison or infection. As this new tissue, one might speak of it I think as a metamorphosis, approaches in its growth, the alveolar process changes are effected fairly rapidly and the result is a rarefying condition due to increased activity of bone breaking cells. Whether these bone breaking cells are the multi-nuclear osteoclast type or, apparently from the pictures, an osteoblast cell is to my mind an academic question. We find some resorption of bone where the stem of a pipe is fairly constantly held between the same teeth, in certain cases of malignant new growth for example, so that apart from our pathological findings there is no reason to suppose that infection is an essential factor in the commencement of this disease. As a result of the invasion of bone by this new tissue, the bony tissues diminish in size and the marrow spaces are in proportion increased. The marrow spaces are thus occupied by the same type of tissue above described as first affecting the pericementum in the complex form of periodontitis.

Changes now occur in this newly formed tissue. There is noted a marked decrease in the endothelial cell and a corresponding increase in the number of fibroblast cells, the result being the formation of a low grade connective tissue. Contraction of the cell processes causes, as is usual in newly formed connective tissue, a further diminution of blood supply. As a consequence of this diminution of nutrition there is a marked relaxation of the crest group of fibres of the alveolar process as well as those principal fibres extending from the cementum to the alveolar process and from the cementum to the long finger-like papillae of the Gingiva. With the consequent formation of a subgingival space and the subsequent entry of infection, we have formed the long and extensive pus pocket. The rapidity of this process is due probably to the low grade tissue together with a diminished blood supply encountered by the invading organisms. As to the causative factors underlying the disease, there naturally must be a good deal of speculation. Dr. Box, with the restraint of a born investigator, is content to leave it there until he absolutely knows the truth, but with some of the dogmatism of a teacher I will give you what I feel to be a good working theory.

Any local or general state which brings about a condition of passive hyperaemia or venous congestion, in which less blood than normal enters the area and from which there is a corresponding lessened return is accountable for the commencement of the disease.

In an area so affected the vessels are dilated, crowded with blood cells, the movement of the blood is slower, changes in the permeability of these small capillaries have occurred and there is an increase of fluid in the tis-

sues. On account of the fact that the pericementum is extremely thin and by reason of the fact that there is no possibility of swelling due to the presence on the one side of tooth and on the other of bone, we have a local condition which rapidly becomes one of venous congestion.

Proliferation of the endothelial and fibroblast cell is not due to diminished nutrition only, but is due probably also to the fact that we have a diminished oxygen supply, together with the presence of bye-products of metabolism.

It will be an interesting study to determine the frequency of periodontitis of the complex type in chronic heart disease. I find that in the practice of internal medicine when an obscure condition presents itself for diagnosis that it always is good practice to consider the probable conditions and not to speculate too much on the rarer possibilities.

I feel that the commonest factor in the production of this disease is local repeated simple injury, which brings about the above noted nutritional changes—in other words Traumatic Occlusion.

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## The Mechanics of Occlusion

*G. A. Anderson, M.A., Toronto.*

Mr. Chairman, Ladies and Gentlemen: I think I may be pardoned a certain amount of diffidence in attempting to address a Dental audience on a subject of this kind. What I have to say is practically some explanation of what is contained in the bulletin which everyone has. The only information that I found available on the question of the Mechanics of Occlusion was a paper presented by Dr. Gysi about 1920 I think in New York, in which some discussion was made in regard to the Mechanics of Occlusion. The conclusions he arrived at can be found in his original paper. I have looked at it from a somewhat different point of view, and I simply make what explanation I may make in the matter.

The first point noticed is the question of the Mechanics of the Mandible as a whole. It is often stated that the Mandible is a lever of the third order. A lever of the third order is one where the work is done at a mechanical disadvantage, and on that ground the design of the mandible is criticized as being faulty.

Now in the first place a lever, as we ordinarily understand it, like a crowbar or anything of that kind, is a plane mechanism, that is to say, it is a bar used for raising something, prying up one way or the other, and therefore the forces in it are all in a line. Now the Mandible is not a straight line object, and the Mandible consequently cannot by any stretch of the term be called a lever. It is an extended structure, and the forces brought into play in an ordinary action of the mandible are at least five. In a lever there are only three,—as we ordinarily understand it, is a bar of some kind which rests on one end and is raised on the other. In the case of the Mandible there are at least five actions brought into play. As I have placed that in the mouth there are six. The attachment of the two muscles in the side which pulls the mandible up, the reaction against the condyles and the pressure on the teeth. Finally, there is the force between the teeth and pressure exerted on one or both sides. If you take it straight across, there are six. There are at least five forces concerned in that. The solution of that is an ordinary problem in Mechanics, and we can find from



that, as I have shown in the bulletin, of the crushing here of some object on the tooth placed on this side. We can show that if the object is placed back here, about at the second molar, that the jaw will work with an efficiency of some 55%. Now that is not an inefficient mechanism. The crushing of the object is not the only function that the jaw has to perform, so that must be kept in mind.

Prof. Anderson then showed his slides.

He thereupon further addressed the delegation as follows: "Another tooth is here in position and is subject to the following forces: there is the stress brought upon it by the opposing tooth; there is the resistance of the socket and the pericemental membrane and the alveolar process; that is to say, the tooth is held in position by reactions on the sides above and from below up. If any one of these is reduced or disappears entirely, then motion is bound to result in the direction of reduced resistance. In other words, if a tooth is taken out from one side that normal pressure is reduced—lateral drifting shown will ensue and if the opposing tooth is taken away the tooth rises—elongation.

Now these are the mechanical points that I think you will find incorporated in that paper. I have given this by way of explanation in detail of what is all set forth in the bulletin.

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## Prevention of Chronic Periodontitis

*C. E. Sutton, D.D.S., Toronto.*

The object of this paper is an endeavor to stimulate the interest of the General Dental Practitioner in those diseases of the Periodontal tissues termed by Dr. H. K. Box, Chronic Periodontitis.

This phase of Dentistry has not in the past received the attention its importance merited.

The scope of Operative Dentistry in most offices today is limited to the repair of damage inflicted by caries, to treatment of diseases resulting from exposure or death of the pulp, extraction, and little intelligent attempt at treatment of Chronic Periodontitis.

With the advent of the focal infection theory, and frequent conviction of the teeth and associated tissues, as the causative factors in systemic disease, the dentist has had thrust upon him a very vital responsibility. He has become a factor to be reckoned with in the maintenance of general health, and for this reason he must be qualified to be of the same assistance to the Medical diagnostician as any other medical specialist.

To maintain this position, he must prepare himself to meet the new responsibilities that are entailed. Indeed it is unthinkable that we shall neglect such a service to humanity and fail to keep step with the new demands upon our resources.

We have been censured for our excessive interest in the mechanical phase of dental Practice; and the apathy which we exhibit toward Periodontal Disease; and if we are honest with ourselves, we must acknowledge that these strictures are not far from the truth.

The status of the pulpless tooth is not settled, and if there should be produced irrefutable evidence that a pulpless tooth is a menace to general health, the field of Dentistry would be a narrow one indeed.

However, there is left the almost unexplored region of the periodontal tissues. It is estimated that the great majority of people past middle age, and a high percentage under that period, are affected with some form of Periodontal disease, to a greater or lesser degree.

It is undoubtedly true that as many teeth are lost from these diseases, as from all other causes, and there is no doubt that parietal disease is quite as great a menace as periapical lesions, to the general health.

The opportunity for service in this field is so great, that it is amazing, we have so long neglected it. It is not easy to place the blame for this neglect, but the basic reason would seem to be lack of understanding of the pathology and etiology of these periodontal diseases.

There is no doubt that extreme pessimism exists regarding prevention or treatment of Chronic Periodontitis, and we can scarcely wonder, when we see so much empiricism displayed in our literature on the subject. Drugs, electricity, vaccines, all have their advocates.

Certain men claim that success can only be expected through an operation which requires the excision of the gingival tissues, and in many cases the alveolar bone as well; a treatment which could only be undertaken by the most ruthless practitioner.

However, with the discovery of the basic lesion, Rarefying Pericementitis Fibrosa and its relationship to Infective Periodontitis, and the proven hypothesis that Chronic Periodontitis belongs in the category of curable diseases, a new era has been ushered in.

Prevention is defined as the warding off of disease. It is the ideal towards which we all are striving in both Medicine and Dentistry.

Preventive Medicine has made such wonderful strides in recent times, that we are fortunate to be living in this enlightened age, instead of in the past, when our physicians were helpless in the presence of so many diseases, now conquered. There remains much to be done, and eminent authorities predict, that the next great forward step, should be made by research, in oral disease.

Upon the General Dental Practitioner lies the responsibility of preventing Chronic Periodontitis. He is consulted by the patient as a rule, for other forms of service, unsuspecting the presence of incipient lesions, which may lead to loss of teeth, destruction of the associated tissues, and establishment of foci of infection.

As an outstanding pre-requisite, the practitioner must have the ability to make a diagnosis. To make a diagnosis implies a knowledge of the nature of the lesions comprising this composite disease, and the regions in which these disease processes become initiated, as well as the known, causative factors involved.

But as a background he must be familiar with the tissues, in a normal healthy condition, and in normal function.

It will be recalled that the term "Periodontium" is used, to designate the supporting tissues of the teeth. Its three main tissue components are, the Gingivae, the Pericementum, and the Alveolar bone.

By the term "Periodontitis" is denoted an inflammation of the periodontium, and a disease so designated, involves, *all three tissue* components.

Based on clinical and pathological findings, chronic inflammations of the Periodontium may be classified as:

- (1) Chronic Periodontitis (Simplex)
- (2) Chronic Periodontitis (Complex)



In both types of Chronic Periodontitis, infection has gained entrance into the Cemental Gingiva, and produced a pocket progressing into the deeper tissues.

Normal Gingivae are highly vascularized, resistant, tissues.

Some agency must lower their resistance, in order that the ever present bacteria may gain entrance into these tissues.

Interference with capillary circulation results in lowered resistance, and it will be recalled that the weak link in the chain of protection, from infection, is the thinness, and breaks in the continuity of the epithelium, on the crevicular surface of the marginal gingivae.

There is a long list of irritants, which can produce a gingivitis. Such as plaques, rough enamel, etched enamel, rough edges of fillings, food debris, food impaction, etc.

By progression of the infective inflammatory process, a pocket is formed in the Cemental Gingiva. By extension of this pocket, bone absorption takes place, and the Pericementum is infected.

In this order is produced the type of Chronic Periodontitis, called "Simplex." This type is comparatively rare, with shallow pockets, of fairly even depth, encircling the tooth; and for these reasons called by some, a horizontal type.

The Complex type is produced in an entirely different manner. It consists of the infective periodontitis just described, which has been superimposed, upon an already established Rarefying Pericementitis Fibrosa. This latter is a chronic and progressing lesion of the Pericementum, which results in the rarefaction and destruction of the alveolar bone.

It is to be emphasized that this disease which affects the pericementum and bone is *not* an infective process.

There are two points of the greatest importance to be borne in mind concerning this basic lesion, Pericementitis Fibrosa.

1st. That the lesion is a casual one, in that it provides the requirements for the establishment of infection, in the gingivae, and its progression into the deeper tissues.

2nd. That the lesions manifest themselves in the periodontal tissues of teeth in over-function, or traumatic occlusion, and appear to originate in the pericemental tissues which are subjected to abnormal occlusal stress.

In other words, traumatic occlusion seems to serve as the important factor, in the localization of the disease process.

Conversely; it would seem therefore, that the important factor in the protection against localization of this disease process is the existence of either normal or acquired physiological occlusion.

It will be recalled that the subject of this paper is the prevention of Infective Periodontitis.

The preventive measures to be instituted may be divided into *five* main groups:

- (1) Early diagnosis of Rarefying Pericementitis Fibrosa.
- (2) Early diagnosis of Chronic Gingivitis (pocket in the Cemental Gingivae)
- (3) Establishment of physiological occlusion, because of its beneficial effect upon the Fibrosa, and thus upon the Gingival tissues.
- (4) Establishment of adequate oral hygiene-measures
- (5) The production of increased local immunity, through vaccine therapy.

## DIAGNOSIS OF RAREFYING PERICEMENTITIS FIBROSA

While the formation of peri-vascular nodules is the essential element in the early stages of Pericementitis Fibrosa, the spectacular phase is the rarefaction and destruction of the alveolar bone.

While in certain cases through very slight divergence from the normal mobility of the tooth in its alveolus, the primary pericemental lesion may be detected; yet, in the majority of cases the disease is first manifested through structural changes in the alveolar bone.

These are apparent radiographically under certain conditions, in the crests of the septal bone and in the lamina dura of the wall of the alveolus.

Any disturbance of the normal relationship of the alveolar crest to the amelo-cemental junction or of the normal relationship of the lamina dura to the pericementum must be viewed with suspicion.

Recession of the gingival margin toward the amelo-cemental line is usually indicative of alveolar crest resorption. This may be manifested in the mouth as symmetric or asymmetric recession.

In certain cases the process of rarefaction is characterized by a fairly-uniform resorption of the alveolar wall with consequent widening of the normal pericemental space, and consequent thickening of the soft tissue content lying between the tooth and the bone.

In these cases there is likely to be found a marked divergence from normal mobility.

It is to be stressed that the gingivae are normal with no increase in the normal depth of the gingival crevice.

## EARLY DIAGNOSIS OF CHRONIC GINGIVITIS

(Pocket in the cemental gingiva)

The significant feature of the establishment of infection in the gingival tissues is the fact that in the majority of cases it begins, as a sub-acute process, a reaction to mildly-injurious agents.

Through this process the epithelium proliferates along the tooth, and with separation a pocket is formed. Because of its mild inflammatory nature in many cases the probe has to be resorted to for detection of any increase from normal in the depth of the gingival crevice. It can be assumed in the average case that when the probe penetrates farther than the 2 mm mark, but not farther than the 4 mm mark, we are dealing with a pocket in the Cemental Gingivae; and this is indicative of chronic gingivitis.

## ESTABLISHMENT OF PHYSIOLOGICAL OCCLUSION

Any tooth under occlusal stress and acted upon by forces in equilibrium presents to us the ideal picture of physiological occlusion. That is a condition in which the force of resistance offered by the alveolar process is equalled by the occlusal stress directed through the tooth. When the system or systems of forces acting upon the tooth are not in equilibrium, the tooth can be said to be in traumatic occlusion.

In physiological occlusion there is present as a rule an admirable co-ordination of jaw with jaw and tooth with tooth; but of first importance is the harmonious relation existing between the tooth and its periodontium.

The procedure of transforming so-called traumatic occlusion into physiological occlusion is termed equilibration. As physiological occlusion



appears to exert a protective influence against the establishment of the basic lesion of Chronic Periodontitis, its establishment by the operator is a fundamental requisite as a preventive measure.

### ESTABLISHMENT OF ADEQUATE ORAL HYGIENE

This subject will be dealt with from two viewpoints:

- (A) Sanitation
- (B) Stimulation

The responsibility is placed upon the operator, of establishing such conditions in the mouth, that the patient with reasonable care, can maintain a state of cleanliness. The removal of salivary and serumal concretions, ragged edges of fillings, crows, etc., and restoration of proper contacts in this relation, is thoroughly understood, and needs no further comment.

It is a striking feature that clean teeth are usually associated with healthy gingival tissues. In other words, great difficulty is experienced by the patient, in keeping the enamel surfaces clean in the presence of marked infection of the gingivae.

The average patient through faulty instruction, or through lack of any instruction in the care of the mouth, has acquired an improper system of oral hygiene. It rests with the dentist to instruct the patient in such a system, as will adequately keep the teeth clean, and through stimulation to the gingival circulation, maintain in the soft tissues a state of high tone. It is doubtful if any known system meets these requirements quite as well as that advocated by Charters, and modified somewhat by Bricker, Stillman and others. Briefly, this method entails the placing of the bristles of the tooth-brush in certain positions, so that all surfaces can be subjected to a vigorous vibratory action of the bristles. Their direction is such that the bristles penetrate to a slight extent into the gingival crevices, and under pressure the gingival tissues become blanched, owing to pressure upon the blood-vessels. Relaxation of pressure is followed by a rush of new blood into the tissues. A prolonged and gentle stimulation of this kind leaves the tissues in a state of warmth or glow, not unlike the reaction in the skin to massage. The brush is dipped in a mild salt solution. It is important to emphasize the fact that while the bristles *dislodge* foreign material, they do not *remove* it from the mouth; this is accomplished by repeated rinsing with clear water.

A useful adjunct in certain cases where tissue tone is low, has been found in the use of the vibrator attached to the dental hand-piece.

In certain mouths there is noted an evident susceptibility of the whole mouth to infection. In these cases beneficial results have been noted following the administration of a new polyvalent vaccine perfected by Goldenberg of Paris. It has for its object the production of anti-bodies in the mucous membrane.

### DISCUSSION

There was some general discussion, diverse opinions were expressed with reference to Traumatic Occlusion, when Dr. McDonough of Toronto addressed the delegation as follows:

Mr. Chairman, Ladies and Gentlemen: I am going to do what I rarely do on an occasion of this kind—make an apology. I see that you gentlemen expect me to say something that will be of interest to you. I have not

seen the bulletin that you have. I could not get a copy of it, and I have not really had time to study it and express myself upon it, but I will tell you all I can in the short time I have.

In the first place, I want to say that I have the greatest admiration and appreciation of Dr. Harold Box. Dr. Harold Box has done work that no other Canadian has done. He has gone into the field of Histology and has done more in that field than any other ten men have done in Canada. He has kept to his work night and day and he has produced a great many things. Many things that he has produced have not just been what he thought they were, but every investigator has that experience. I believe I have objected to some of the findings that he has expressed in some of his slides, but that goes with every investigator. At the present time it has been said that we were disappointed because we have not received anything new. (This apropos of the remarks from someone in the audience during the discussion) Gentlemen, we have received something interesting—this description of the manner of the destruction of the alveolus is a new description. I do not believe it is a new disease as we have had it pictured to us, but a new description of a condition in the mouth. Perhaps there are similar conditions which have been described in other parts of the body, but they have not been described as taking place in the mouth, and Dr. Box has described the destruction of the pericementum and the alveolus as it occurs in that particular place.

Now I am not quarrelling with what Dr. Graham has said, today, but some of the reports I do take exception to. I say positively that traumatic occlusion is not and never could be the primary aetiological factor in dental periclasia. What causes Traumatic Occlusion? Take the North American Indian and the Eskimo, who lead a natural life, they have no Traumatic Occlusion. They have almost perfect peridontium. Therefore you must go back and get some cause for your Traumatic Occlusion if you want your primary aetiological factor. Crowns and inlays, etc., are always (except through an accident) the result of some etiological factor, dating back in the history of the patient, and therefore could not be the primary etiological factor in periodontoclasia. So also with malocclusion which is often spoken of and undoubtedly is at times a cause of traumatic occlusion. Dr. Grieve in his remarks said we have today been studying symptoms and I agree with him. We have to get back of that if we are ever going to get anywhere, and we are going to get there by education, educating the mothers and by educating those others who are taking care of children.

Down in the Forsythe Institute, when I was there some time ago, Dr. Howe showed me cases of Dental Periclasia in animals caused by feeding. Dr. Howe says—and he proves by his experiments—that as a result of Scorbutic diet or the lack of sunshine that the blood vessels in the pericementum break down. Is this not a significant fact? Dr. Eugene Talbot years ago came out with the flat assertion that the cause of interstitial gingivitis was constitutional. Dr. Graham comes to us today and says these changes in the pericementum are due to nutritional disturbances. Why is there nutritional disturbances? Because of traumatic occlusion? or is it from a systemic cause? Now if we have something new we must find out what it is. We know one cause of Dental Periclasia; we know we can cause it by feeding. Every practitioner knows that. You know there are hundreds of cases every spring in such countries as Finland where the



winter is long, which clear up, because the ill effects of scorbutic feeding throughout the winter are overcome as soon as green vegetables are available.

We know that those things happen, and now Dr. Box comes along and he shows us slides showing a condition in the pericementum and a condition in the bone which probably will throw more light on this subject, and I am glad to see, according to Dr. Graham, he does not say: "This is the result of any one particular factor." He says: "Here are the slides, draw your own conclusions." As far as I can see, Dr. Graham and Dr. Box do not draw the conclusions; it must have been the newspaper men who have been drawing the conclusions.

Now we come to Traumatic Occlusion. I was talking it for a great many years. I was greatly stimulated in the study of it by Dr. Stillman. He is an enthusiast. All of his theories do good, as that sort of man who makes a hobby of a study for a short time does more good to our profession, than one who always depends on the other fellow. Well, I was stimulated by Dr. Stillman, and I acknowledge that I was; but found that my results from grinding the teeth were not the same as his. So I said I would go a little further, and as you will find from a reprint of a lecture I gave down in Atlanta a couple of years ago, the gist of the whole thing is this: that Traumatic Occlusion, as we talk of it every day, is nonsense. You do not usually get injury from Traumatic Occlusion when the impact is in a line with the long axis of the tooth. The injury you get is from leverage—when the line of impact is not in the natural line, not in the line of the long axis of the teeth. I have seen teeth ruined by over-grinding; grinding just for the fun of grinding is a crime. They are not doing that now over on the other side. The best men over there, instead of grinding the teeth, in many cases are building them up, building them back to normal, paying attention to the age and physical condition of the patient. I tell you, Gentlemen, and you all know it as well as I do; before we knew anything about this extreme teaching of Traumatic Occlusion we treated successfully what we called Pyorrhea. I have cases coming into my office that I treated and others which you gentlemen treated ten, twenty years ago, which today appear to be perfectly healthy teeth. Why? Because you at that time gave good instructions and corrected pathological conditions. Don't get the idea that I am decrying grinding the teeth when it should be done; but it is only done when you get an unnatural leverage.

Now as regards the tissue breaking down around the blood vessels: Several years ago Dr. Arthur Black came here, and told us that Dr. Noyes had shown conclusively that the peri-vascular lymphatics in the pericementum carried infection from the gingival crevice up through the pericementum and that somewhere in the peri-vascular lymphatics there was a possibility of stasis, eventually resulting in the destruction of the alveolus. Dr. Noyes says he had found micro organisms in those positions, and at time he had found no infection. Now Dr. Box comes along and says *there is no* infection, where the pericementum is breaking down around the blood vessels. Just one step further along the work. It is quite true that perhaps the specimens which Dr. Box has had had no infection. That is an academic question, and it is not decided to-day. I do not pretend to be able to criticize the work of a pathologist such as Noyes or Hopewell-Smith, men who are in the same line as Box. I have enough sense to pick out what is good in their work I hope, but the fact that we have different opinions of different men makes me exceedingly sorry that

this bulletin which we have issued to-day had not the benefit of the constructive criticism of a man like Noyes or Hopewell-Smith.

There is just one more point I am going to make and then I am going to sit down. In my discussion at Atlanta I made the following point. I said the veins and lymphatics in the pericementum have no elastic coat, and they have no elasticity on account of the action of the heart, the arteries have. They have the force of the heart behind them. When you make an unnatural impact on your tooth, not in the line of the long axis of the root, you are apt to injure the vessels in the pericementum and cause stasis in the return blood at some point and at that point you will have breaking down of your adjacent tissue. Now as far as rectifying that condition, rectify your occlusion. As far as "pyorrhea" being a curable disease, it certainly is. It is no more curable to-day than it was twenty or thirty years ago, but it always was curable. Only the greatest pessimist would say otherwise to-day.

Dr. Craig of Peterboro then spoke for a moment, paying great tribute to Dr. Box's work, claiming it was epoch making in the dental profession.

DR. HUSBAND: I would like to draw attention to one or two things. The question of Traumatic Occlusion has been raised, and my feelings are very much in line with what has been said. If we consider the ordinary things that we notice in practice which bring about traumatic occlusion and the periclasia resulting from it, as for instance the leaving of a filling in a tooth too high, we know that we have created traumatic occlusion; if we leave an artificial crown too high we create traumatic occlusion, and have periclasia, or a soreness in the periodontium. But in a healthy patient do not these teeth soon adjust themselves and the periclasia prove but temporary?

I have examined hundreds of cases amongst the students and if you would stand by the chair and see the various mouths you would open your eyes. You would see cases where there were hardly two teeth in normal occlusion in the mouth—you would see comparatively few cases of normal occlusion—and yet in many of these cases no evidence whatever of periclasia, despite these dental deformities! On the other hand, we have in cases of beautifully articulated dentures—periclasia! What is the reason for this? Nutritional changes probably. We had an interesting case in one of the students. He hadn't but four teeth in contact, not to say in normal occlusion, and yet as beautiful a set of gums as you could imagine. I don't think that a tooth occluded anterior to the second molar, and yet as beautiful a case of health in that mouth as you could wish to see. We all were discussing some of the causative factors in his case from a historical standpoint, and I said to him: "What is the reason you have not periclasia?" He gave as a reason Dr. Box's opinion of his case, viz., the exceptionally high resisting qualities of his system. What is resistance or the lack of resistance? You take the old patient whose teeth have worn down—he has grown old gracefully and has not periclasia. What is behind it? It often puts me in mind of a picture of a wilful school boy going to school for the first time. He gets in wrong with his classmates because of his little idiosyncrasies, but if he is a good healthy type he will soon be put right in a normal school. Now that is the state of a healthy mouth where the nutrition is good. If the boy be an unhealthy, abnormal type, every irritation will be exaggerated and things will go from bad to worse with him. So with the mouth whose



tissues are nourished by a blood supply contaminated by toxins and other deleterious material—bone tissue, pericemental membrane, gum tissue, etc., all suffer and undergo degenerative changes. The attributed cause is more often the product of the patient's general condition and, in the majority of cases, where so-called traumatic occlusion is cited as the *cause*, it is, in reality, the *product*. What is polluting this blood current that is creating this auto intoxication? You have been told there is no infection. Now what is causing this change of the tissue? Where is the poisoning coming from? I would be too long if I started to tell you where I think it comes from. But briefly, when the demands of the body and the supply put into that body are off tangent, or out of harmony you can look for this trouble. Just keep a few histories and you can find that the supply is not in harmony with the patient's need. An individual—to be healthy—needs proper food, in proper quantity, and well masticated; also his body requires regular daily exercise of a vigorous nature.

*Editor's Note--Dr. Sutton says that the stenographic report of his remarks in closing the discussion is so inadequate that he prefers not to have it published.*

## '19 D.S.C. Programme 1924-25

JANUARY 7th—"Bite-Plate" ..... S. S. Crouch  
 "Educating the Patient" ..... R. M. Watson  
 Host: S. S. CROUCH

FEBRUARY 4th—"Treatment of Putrescent Pulps"....S. M. Richardson  
 "Gold Foil Fillings."  
 Host: A. M. HORD

MARCH 4th—"Operative Dentistry in Relation to Prevention of  
 Dental Caries" ..... H. Ross  
 "Diet in Relation to Prevention of Dental Caries."..... H. G. Bean  
 Host: B. M. OTT

APRIL 1st—"Selected" ..... B. M. Ott  
 Host: H. G. BEAN

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## Dental Activities in B.C.

Dr. T. W. Snipes is leaving Vancouver to take up practise in California. Members of the Profession in British Columbia regret very much Dr. Snipe's departure. Dr. Snipes has been a steady influence in the formation and activities of the Vancouver Dental Society and various study clubs. Vancouver's loss will be California's gain. The annual election of the Victoria Dental Society held on October 21st.

President, Dr. Chas. A. Harding; Vice-President, Dr. Arthur Poyntz; Secretary, Dr. Samuel Youlden; Treasurer, Dr. Benjamin Nickells; Executive Committee: Dr. Lewis Hall, Dr. William Russell, Dr. R. E. McKeon.

Dr. W. N. Gunning was appointed consultant Dental Surgeon on the staff of the Royal Jubilee Hospital.

## Successful D.D.C. Candidates

The following have passed the D.D.C. examination in—

**Operative Dentistry:** Allan, G. W.; Armstrong, W. F.; Cathro, C. A.; Cooper, F. B.; Deegan, A. A.; Fawlie, J. R.; Henderson, W. S.; Hughes, A. E.; Munroe, D. H.; McIntosh, C. E.; Perkin, J. G.; Shepherd, R. P.; Shepherd, F. H.; Sutherland, A. M.

**Pathology & Bacteriology:** Anderson, W. S.; Armstrong, W. F.; Browne, C. T.; Cathro, C. A.; Cooper, F. B.; Dawson, W. G.; Deegan, A. A.; Fawlie, J. R.; Hennigar, A. E.; James, L. V.; Johnstone, L. A.; Munroe, D. H.; Shepherd, F. H.; Sutherland, A. M.; Willigar, W. G.

**Jurisprudence & Ethics:** Anderson, W. S.; Anthony, A. B.; Armstrong, W. F.; Cathro, C. A.; Cooper, F. B.; Darts, G. C.; Deegan, A. A.; Doan, F. W.; Fawlie, J. R.; Higgins, A. E.; Munroe, D. H.; McIntosh, C. E.; Shepherd, R. P.; Sutherland, A. M.

**Physiology & Histology:** Cooke, A. R.; Connell, E. W.; Darts, G. C.; Deegan, A. A.; Fawlie, J. R.; Hughes, A. E.; Hughes, R. W.; Munroe, D. H.; McBroom, R. E.; McCarthy, T. G.; Nathress, J. A.; O'Connor, T. H.; Phin, A. W.; Sproule, F. E.; Urie, E. H.; West, J. F.

**Physiology (only):** Endicott, C. L.; Thomas, W. G.

**Histology (only):** Demuth, A. H.; Kriehoff, C. F.; McLaughlin, T. E.; Reeves, H. W.

**Medicine & Surgery:** Anderson, W. S.; Cathro, C. A.; Deegan, A. A.; Fawlie, J. R.; Godard, W. R.; Munroe, D. H.; McIntosh, C. E.; Shepherd, R. P.; Sutherland, A. M.

The following have passed their examination in—

**Prosthetic Dentistry & Metallurgy:** Anderson, W. S.; Armstrong, W. F.; Cooper, F. B.; Connell, E. W.; Cross, Sydney; Deegan, A. A.; Fawlie, J. R.; Forbes, R. M.; Fraser, H. R.; Hughes, A. E.; Munroe, D. H.; McIntosh, C. E.; McBroom, R. E.; Perkin, J. G.; Reeves, H. W.; Shepherd, R. P.; Sutherland, A. M.

**Metallurgy (only):** Endicott, C. L.; Garland, C. F.; Hughes, R. W.; McCarthy, T. G.; Phin, A. W.; Thomas, W. G.; Urie, E. H.; West, J. F.

**Materia Medica & Therapeutics:** Browne, C. T.; Butcher, E. C.; Cooper, F. B.; Connell, E. W.; Darts, G. C.; Dawson, W. G.; Deegan, A. A.; Fawlie, J. R.; Hennigar, A. E.; Hughes, A. E.; Hughes, R. W.; Johnstone, L. A.; Munroe, D. H.; Reeves, H. W.; Sutherland, A. M.; Thomas, W. G.; Urie, E. H.; West, J. F.; Willigar, W. G.

**Materia Medica (only):** Cross, Sydney; McBroom, R. E.

**Therapeutics (only):** Perkin, J. G.; Shepherd, F. H.

**Anatomy:** Cooper, F. B.; Deegan, A. A.; Demuth, A. H.; Endicott, C. L.; Fawlie, J. R.; Hughes, R. W.; Kline, M.; Kriehoff, C. F.; Munroe, D. H.; McCaffrey, I. M.; McLaughlin, T. E.; West, J. F.

**Physiology & Histology:** Butcher, E. C.; Cooper, F. B.; Connell, E. W.; Darts, G. C.; Deegan, A. A.; Endicott, C. L.; Fawlie, J. R.; Haversbock, A. B.; Hughes, R. W.; Israel, L. G.; Milburn, W. B.; Munroe, D. H.; McBroom, R. E.; McCarthy, T. G.; Phin, A. W.; Reeves, H. W.; Thomas, W. G.; Urie, E. H.; West, J. F.



# Editorial

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ONTARIO—S. Stewart Crouch, D.D.S.

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## It is the Mental Attitude that Counts

When the artist becomes the artizan or the artizan becomes the artist or the professional man becomes the mechanic or the mechanic becomes the professional man, is all a matter of the mental attitude of the person to his work. So the ethical dentist may do what an unethical dentist does and still be ethical and the unethical dentist may do what the ethical dentist does and still he remains unethical. It is the matter of the attitude of mind towards his actions or the motive for his actions which determines what is ethical and what is unethical. Two dentists may attend the same church, lodge or club, and each be equally prominent, the one may be wholly unethical in attending such a church or club and the other ethical. The one may attend such a church or club to increase his practice having no other interest in the matter, the other goes to church or the club not for monetary gain or public notice or distinction but being a social animal he enjoys communion with his friends. The one is advertising in the church, the other is not. It is the honesty of purpose back of it all in each case which makes the act ethical or unethical. It is this fact that makes it so difficult to determine when certain acts are ethical or unethical. There is the same difficulty in proving perjury against anyone, because it must be proven that the accused knew he was swearing falsely when he did so. It is to prove that he knew he was swearing falsely when he did it that makes it difficult to prove. In ethics the difficulty is not only to prove that the act is wrong in itself but that the person so acting knew it was wrong when he did it.

In order to get around these technical difficulties in the professions some of them have specified what acts are unethical, but since it is im-

possible to classify all actions of mankind into ethical and unethical precedent is accepted as the fairest means of determination in unclassified actions. Two dentists may read papers before a dental society or public meeting, one does it for his own advancement, and the other does it as his contribution for the good of the race or community. One is unethical and the other is ethical.

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## Notes

Dr. George Wood Clapp is doing a wonderful work in preparing a life history of J. Leon Williams.

Twenty-five per cent. of all cases of Tuberculosis in children up to sixteen years of age come from infected milk.

Premier Ferguson is reported as having said that the government would prefer to lend financial aid to the teaching of dentistry through the University budget.

Dr. Simon L. Frawley and Dr. Gordon L. Frawley announce the removal of their practice from 2 Bloor Street East, to The Physicians' and Surgeons' Building, 86 Bloor Street West, Toronto, where they will continue to specialize in Exodontia and X-ray Diagnosis. Office hours, 9 to 6. Telephone: Office, Randolph 0698, Residence, Juct. 5766.

At the meeting of the Oral and Plastic Surgeons of America, held in New York on October 20, Fulton Risdon, D.D.S., M.B., F.A.C.S., was made President-elect for the ensuing year. Dr. Risdon is a member of the staff of the Toronto General Hospital on the service of Dr. Perry Goldsmith—Ear, Nose and Throat—holds the Chair of Surgery in the Royal College of Dental Surgeons, and is Consultant to the D.S.C.R. in Reconstruction Surgery.

In the October S. S. White letter appears a photograph of each of the employees of the company who have served for more than forty years. There are many among them who have spent fifty years and some well over sixty with the company. Nothing could speak more highly for any organization than the fact that its employees have remained so many years in its service. All the S. S. White dental mfg. companies standards are high. It has always stood for the highest in both quality and ethics. Every branch office of the company should frame the picture and hang it in a conspicuous place.

There are two situations in which a few dentists always make a sorry exhibition. One in which they apologize for being a dentist, "I am only a dentist." The other is much worse. Immediately they are introduced to a physician or a medical society they proceed to recite cases in which physicians have made grievous errors in diagnosis and treatment and they have made a cure at once.

Dr. A. E. Heacock, of Westlock, has been appointed by the Provincial Department of Health to the position of Dentist to the several government institutions in Alberta. He will be on the staff of the Department and will, in addition to his work at the institution, take care of all the dental service in connection with the public health clinics.

The new appointee was for several years a practitioner in Calgary but removed to a farm near Westlock because of ill health. Latterly he has resumed practice in the northern town and now returns to active service again under the government health branch.



The home of Dr. Saunders, Montreal, was robbed during the absence of the doctor and his wife in New York.

Dr. John A. Bothwell gave a clinic on impression taking at the regular monthly meeting of the Ottawa Dental Society in October.

Dr. J. E. Wright, R.C.D.S., has opened an office in Moose Jaw, Sask.

Dr. D. J. Bresch of Toledo, Ohio, gave an address to the Calgary Dental Society on a new bridge attachment.

Dr. Charles Bodecker has discovered an organic matrix in the enamel of human teeth.

Dr. Seccombe addressed the Academy of Dentistry of Hamilton on the subject of Nutrition in relation to the prevention of sickness.

Officers of the Oral Hygiene Council of Canada: Hon. S. C. Mewburn, President; E. C. Reid, Vice-President; E. A. Grant, Secretary-Treasurer; O. D. A. Mason, Wallace Seccombe, W. C. Trotter, H. E. Eaton, A. H. Broughton and F. J. Conboy.

Dr Hambly, a Canadian who is practicing dentistry in California, while visiting friends in Toronto recently, gave a newspaper interview in which he said he had a cure for pyorrhea. It chiefly consisted in a correct diet.

Dr. B. G. Davidson, Hamilton, was called before the court for employing an unregistered dentist as an assistant.

According to a newspaper report Premier Ferguson of Ontario advised a committee of the R.C.D.S. to open negotiations with the University of Toronto with a view of becoming a faculty.

The following Canadians are in attendance at the North Pacific College of Portland:

W. H. Price of Nanaimo; W. C. Cusack, Chilliwack; Robert Hunter, Vancouver; C. E. Nesbitt, Oxbow, Sask.; R. W. Morrison, Nelson, B.C.; W. B. McArthur, Vancouver; C. R. Hallman, Vancouver; Samuel Hannah, Revelstoke; Asajiro Fujiwara, James L. Baxter and Frank Young, Vancouver.

In the second year the following have matriculated: C. E. Bradshaw, Nelson; A. T. Trenholm, Leodale, Alta; A. C. Stover, Nanaimo; J. H. Hocking, Victoria; F. H. Penwell, Vancouver; K. W. Murchie, Duncan; E. S. Fowles, Victoria, and D. J. Southerland, Cumberland.

Students entering the third year are: A. T. Verchere, Ladysmith; C. E. Jerome, Vancouver; V. W. Tarlton, Vancouver; J. R. Goss, Victoria; J. A. Fraser, Victoria; R. H. Colbourn, Vancouver; B. D. Straith, Victoria; A. S. Webster, Victoria; R. C. Parby, Saanichton; C. H. Ridley, Vancouver, and Adam T. Neen, Nanaimo.

Senior Students are: G. W. Abrams, Vancouver; L. K. Grady, Vancouver; W. A. Allen, Victoria; S. McQueen, Vancouver; L. L. Osterhout, Vancouver; W. G. Ledingham, Victoria; Fred Harling, Vancouver; E. G. Bryant, Ladysmith; F. M. Murray, Outlook, Sask.; G. M. Newby, Chilliwack; J. A. Chambers, Salmon Arm; D. W. Dewar, Vancouver, and F. A. Smith, Victoria.

Everything that exists. Everything that ever has existed. Everything that ever may exist was first a thought and depends upon thought for its existence.

Bismarck said of the educated and cultured East Indian he "knows all that we know and all that he knows besides."

The twenty-fourth Annual Meeting of the American Society of Orthodontists will be held in the new Atlanta-Biltmore Hotel, at Atlanta, Ga., April 14, 15, 16 and 17, 1925. Walter H. Ellis, Secretary-Treasurer, 397 Delaware Avenue, Buffalo, N.Y. Clinton C. Howard, President, Doctors' Building, Atlanta, Ga.

The will of the late Harry R. Abbott, D.D.S., London, Ont., provided that the income from \$15,000 be used each year to buy books for the library of the Royal College of Dental Surgeons, Toronto.

The Fifty-Sixth Annual Meeting of the Kentucky State Dental Association will be held at the Brown Hotel, Louisville, Ky., April 6-7-8, 1925.

Dr. Hugh McElrath, President, Murray; and Dr. Wm. M. Randall, Secretary, 1035 Second, Louisville, Ky.

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## Christmas Greetings

Dr. George Kerr Thompson, President of the Canadian Dental Association and Mrs. Thompson extend Christmas greetings to members of the Dental Profession and their families with a hearty invitation to visit Halifax, N.S., during the summer of 1926 on the occasion of the meeting of the Association in that city.

Dec. 4, 1924.

*George Kerr Thompson,  
Chronicle Bldg, Halifax, N.S.*

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## Book Reviews

FIVE LECTURES ON THE GROWTH OF THE JAWS, NORMAL AND ABNORMAL IN HEALTH AND DISEASE. Delivered under the auspices of, and published by, the Dental Board of the United Kingdom. 44 Hallam Street W.1, London, England. Price 5 shillings net.

These lectures were delivered at London, Liverpool, Manchester, Birmingham, Leeds, Edinburgh, Glasgow, Bristol, Dublin, and several other universities. The lecturers are among the most noted in their several departments. The headings are: The development of the bones around the mouth; The growth of the jaws and palate; The genesis and growth of deformed jaws and palates; The teeth in relation to the normal and abnormal growth of the jaws; Concerning certain structural changes which are taking place in our jaws and teeth.

Nothing of such an authoritative character has heretofore been presented in this department of dentistry, and nothing is of greater value to the dental profession. Facts of fundamental importance are presented for the first time. The theories of deformities and defects of the teeth and jaws will have to be recast on the bases of the discoveries presented. There does not seem to be any reduction in the size of the nasal cavity which has been thought to have been the cause of mouth breathing and associated deformities.

The Dental Board's action in having authoritative lectures delivered in the important centres of Britain is a new idea in dental education. The extension of the information to all readers is very gratifying and shows a generosity of spirit pertaining to the educated classes of all lands. Teachers of anatomy and the practice of dentistry can hardly get along without having read these interesting lectures.



## The Dental Register

The publishers of Polk's Dental Register advise us that the replies to 65,000 questionnaires mailed by them, (presumably reaching every dentist in the United States and Canada), are not as yet sufficient to assure that completeness and accuracy which they are determined to attain. At the time of reporting to us only slightly in excess of 25 per cent. replies have been received. The failure to send in *your* name may indicate the presence of only a small number of dentists in your city or town, and thus mislead those who desire to change location or who are establishing themselves in practice, to select your city or town, which may, however, already have all the dentists it requires.

With the vast number of changes in location, it is impossible to compile a complete list of dentists, without *your* personal co-operation. Many seem to think that because their address is the same now as it was in the 1917 edition of the Register, that it is not necessary to reply to the questionnaire. This is a grave error. Unless *you* will reply or send in your name, it must be assumed that you are no longer in practice.

We desire to call your earnest attention to this important matter. It takes but a few moments to send in your name. Do it now. The members of the profession should realize that an accurate dental directory is an urgent requirement, and that its completeness depends on each individual dentist. The publishers are sparing no expense in time or money. They have secured every name from every possible source. But many of the letters are returned endorsed "not there," "moved," "left no address," "not known," "not found," etc. If you have not sent in your questionnaire, please send it at once. If you have not received one, please send your name and address to the publishers, (R. L. Polk & Co., 536 So. Clark Street, Chicago) without delay.

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## CORRESPONDENCE

### A Burning Sensation on the Side of the Tongue

In the October issue you ask for suggestions for the diagnosis and treatment of a case of a burning sensation of the tongue.

That particular sensation may be caused by an acute popular glossitis. This is very uncommon and is accompanied by severe headaches. The etiology is obscure and the treatment indifferent.

The burning sensation of the tongue is a symptom of pernicious anemia. I would suggest a blood count to ascertain the proper percentage of red blood corpuscles.

A gastro intestinal disorder, often manifests itself by a burning sensation of the tongue or mucous membrane of the cheeks. This sensation usually disappears during mastication and from your diagnosis I believe that is the most likely etiology of your case.

Burning sensation may be caused by a reflex stimulation of the lingual nerve. If the muscles of the neck were tense they may cause impingement on the cervical plexus and manifest itself on the tongue by a reflex stimulation through the lingual nerve. I would have patient consult a neurologist.

Hoping the above information will prove satisfactory, I am,

Yours very truly,

## Obituary

Dr. Frank Ryan, Dean of the Dental Faculty of Dalhousie University, Halifax, died with great suddenness, October 17, 1924. Although Dr. Ryan had an illness a couple of years ago from which he did not completely recover, even his nearest friends thought he would be spared to follow his profession and educational duties for many years. Dr. Ryan was born in Sussex, N.B., and obtained his professional education at the University of Michigan, Ann Arbor. He soon acquired a practice in Halifax, and associated himself with Drs. Frank Woodbury, Hibberd Woodbury and Geo. K. Thompson. These, with one or two more, established the Maritime Dental College, which afterwards became the Dental Faculty of Dalhousie University. He held the position of Professor of Operative Dentistry from the first, and after the death of Dr. Woodbury became Dean. He took a prominent part in all matters pertaining to his profession not only in Nova Scotia but throughout the Dominion. He was a constant attendant at dental meetings in the United States. As a travelling companion and a quiet observer of interesting things about him, he had few equals. He was a frequent contributor to professional literature, as well as a fluent, concise speaker at dental gatherings. The profession of Halifax, as well as the Dominion, has lost a man of outstanding ability and integrity. He leaves a wife to mourn his loss.

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**FOR RENT**—Dental Suite. First floor north east corner Bloor & Yonge. Three years lease from 1st of January. Rent reasonable. Apply Dr. J. A. Bothwell, 86 Bloor St. West.

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**FOR SALE**—City Practice For Sale; Centrally located; low overhead; doing fair business; present occupant leaving for Detroit. Box 15, Dental Journal, 73 Richmond W., Toronto.

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**TO RENT**—A dental suite to rent in new building, corner Queen Street West and Macdonell Ave., Parkdale. Plumbing for two chairs, hot and cold water, laboratory, rest room, etc., splendid lighting. Woolworth's Store and Shaw's Business College are in the same building. Phone Lakeside 0060, or Lakeside 7935.











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